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The Role of Teacher/Child Interaction Assessments in Supporting Professional Learning within 4K Settings

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Abstract
This article presents three cases of school districts/consortia in a southeastern state, where standardized measures focused on teacher/child interactions rather than student outcomes were implemented to guide decision-making. These three districts/consortia were funded annually for three years to implement innovative professional development initiatives for publicly funded 4K, focusing on social and emotional development, language and literacy, and overall classroom quality. Individual outcomes are presented along with commonalities across all three cases. A discussion of how standardized measures focused less on outcomes and more on interactions can support classroom instruction and management and improve dispositions towards assessment.

Keywords Assessment · Early Childhood · Interactions · Teacher · Child · Decision-Making

Standardized assessments are often seen as a necessary evil by many parents, teachers, administrators, and even from those involved in educational policy decision-making. For some stakeholders, assessments might even be labeled as a waste of valuable time that could be spent on instruction (Segall, 2003). With standardized assessments receiving such negative reactions from those who are involved in day-to-day instruction at the classroom level, why are these assessments typically a primary aspect of state and federal policies and grants (Wang, Beckett, & Brown, 2006)? In any study of motivation, the utility value of the object of study is a primary factor in supporting participant motivation (Hecht, Grande, & Harackiewicz, 2020). For many stakeholders in education, while purposeful, formative, or authentic assessment are often regarded as positive strategies for understanding student needs (Gareis, 2007; Nolen, 2011), standardized assessments have little identifiable utility value. However, the underlying philosophy guiding assessment development is grounded in the notion that assessment should be used for a purpose, whether it is to inform instruction or to act as a metric, evaluating the impact of a treatment (such as professional development) (e.g. Nollmeyer and Bangert, 2017).

If standardized assessments continue to be heavily relied upon for policy-oriented decision-making, grant funding, and school-level decisions (whether the stigma around them is warranted or not), then it is necessary to increase their utility value for the teachers that are required to take instructional time away from children to implement these assessments. In 2016, one southeastern state leveraged Community Block Grant funding to pursue this initiative. A requirement for grant proposals was to use a standardized measure to assess the impact of grant activities over time, with priority on establishing this measure as a useful tool for teachers. However, the requirement was not limited to student-oriented assessments. In fact, grant awardees were asked to implement an assessment that focused on the interactions between teachers and children in addition to any assessments focused directly on students. This article presents three cases of grant awardees (school districts/consortia) in this southeastern state, where a standardized

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measure focused on teacher/child interactions was implemented to guide decision-making. These three districts/consortia were funded annually for three years to implement innovative professional development initiatives for publicly funded 4K (and in some cases, included partnerships with Head Start and private childcare), focusing on social and emotional development, language and literacy, and overall classroom quality. While each year, a total of eight to ten awards were distributed through this grant process, the cases presented here demonstrated strong proposals that were consistently funded for three straight years (2017–2019). While strategies differed based on district priorities, all grantees used one of the following assessments focused on teacher/child interactions: Classroom Assessment Scoring System (CLASS), Early Language and Literacy Classroom Observation (ELLCO) tool, or Teaching Pyramid Observation Tool (TPOT) to evaluate the impact of grant activities (D'Amico et al., 2019). This article focuses on the opportunities, challenges, outcomes, and continued use of these standardized teacher-child interaction measures in early childhood classrooms. In particular, we will describe how these assessments guided professional development initiatives and supported teachers in understanding how to translate what they learned in professional development to classroom practice. The overarching research question guiding this work is: What does it mean for a school district/consortia to effectively use standardized assessments to support instruction at the 4K level? While each assessment focuses on a different domain of development, they are tied together through the theme of teacher and child interactions. This focus on interactions allowed districts to be able to have state-level conversations and a more holistic understanding of best practices for working with young children. A commonality amongst these stories is the role of the teacher in understanding the purpose of the assessment and how it is used to inform and support instruction. While we are not advocating for the removal of student-oriented standardized assessments in this article, the use of alternative forms of assessment, whether in a primary or a supplemental manner, can support more robust understandings of teacher and student needs over time.

Review of Literature

The use of teacher-child interactions as a basis for supporting positive child growth and development is grounded in the notion that healthy relationships are critical for young children as they develop cognitive and social/emotional connections to the world around them. When these interactions between teachers and children are positive, children often develop prosocial and self-regulatory behaviors (Pianta, 1999; La Paro et al., 2004; O'Conner & McCartney, 2007) that can aid to cognitive growth over time (Rudasill & Rimm-Kauffman, 2009). For example, a 2007 study conducted by O'Conner and McCartney using secondary data from the NICHD study of Early Child Care identified the predictive nature of teacher and child interactions as the data indicated that positive and frequent interactions at the early childhood levels (prek-3rd grade) led to higher academic achievement by third grade.

Educational researchers and assessment experts have advocated for using assessment results to inform instruction (e.g., Brookhart and Nitko, 2019; Fisher, 2005; Green and Johnson, 2010). Frey and Fisher (2008) found that implementing a system of common formative assessments facilitated teachers' professional development and improved student achievement. Boardman and Woodruff (2004) found that statewide assessments had a significant impact on the implementation, fidelity, and sustainability of teaching approaches. Oftentimes these assessments focus on student outcomes, which can include a wealth of variation based on educational contexts and can sometimes create a less than clear picture of teacher quality. Although some teachers might feel the pressure that is associated with the statewide assessment, an emphasis on standardized assessments should not be considered as categorically negative, particularly when the assessment provides teachers with a framework for teaching (Boardman & Woodruff, 2004).

What follows is an overview of three such assessments that focus on teacher/child interactions instead of student outcomes, the Classroom Assessment Scoring System (CLASS) (Pianta et al., 2008), the Early Language and Literacy Classroom Observation (ELLCO) tool (Smith et al., 2008), and the Teaching Pyramid Observation Tool (TPOT) (Hemmeter et al., 2014). In the context of early childhood education, the CLASS, ELLCO, and TPOT interaction measures were developed based on research underscoring the importance of interactions and relationships within classrooms to academic and social emotional outcomes for children. The use of these interaction measures has demonstrated positive outcomes related to improved teacher practices based on implementation, professional development, and coaching (Cabell et al., 2015; Hemmeter et al., 2014).

The CLASS observational tool (University of Virginia) focused on measuring the quality of teacher-child interactions across a broad range of classroom contexts (early childhood through secondary), regardless of the content area of focus (Pianta et al., 2008). The CLASS is broken into 10 dimensions organized into three domains: Instructional Support, Emotional Support, and Classroom Organization (D'Amico et al., 2019). Emotional Support focuses on the ways in which teachers' everyday interactions sustain and support a positive classroom climate. The Classroom

Organization domain examines routines within the classroom context, organizational procedures established by the classroom teacher, strategies for behavior management. The Instructional Support domain evaluates the extent to which teachers use instruction to support cognitive development. Each dimension is scored on a scale from 1 to 7 with a "low" score indicated as a 1 or 2, a "mid" score as a 3–5, and a "high" score as a 6 or 7 (D'Amico et al. , 2019).

The CLASS has been broadly used as a framework or model in promoting teachers' professional development through a standardized assessment that focuses on teacher-child interactions (Pianta et al., 2008). Some studies found that teacher-child interactions measured by CLASS had relatively low quality with respect to instructional support (e.g., Mashburn et al., 2008; Peisner-Feinberg et al., 2015). Other studies found that interventions using the CLASS framework improved teacher practice (e.g., Early et al., 2017; Hamre et al., 2012; Pianta et al., 2017). Hamre et al. (2012) investigated the effectiveness of a 14-week course that employed the CLASS as the basis to demonstrate teacher-child interactions among early childhood teachers, and they found that teachers who took the course demonstrated more effective emotional and instructional interactions than those who were in the control group. Early et al. (2017) examined the effectiveness of two professional development intervention programs, Making the Most of Classroom Interactions (MMCI) and My Teaching Partner (MTP), that were designed to emphasize teacher-child interactions in preschool classrooms in Georgia. They used the CLASS to evaluate teacher-child interactions and found that both MMCI and MTP resulted in higher posttest scores on Emotional Support in comparison with the control group. Pianta et al. (2017) studied the impact of early childhood professional development on children's school readiness. They used the CLASS as a framework to design the course and coaching professional development sessions that had a focus on effective teacher-child interactions. They found that coaching and the course had positive impacts on children's multiword language behavior, and children taught by teachers who received both coursework and coaching demonstrated greater levels of behavioral control. However, there was no significant associations between the course and coaching that teachers received and children's literacy or language skills. Similarly, Guerrero-Rosada et al. (2020) conducted a replication and extension study of the associations of the CLASS scores and children's learning outcomes, and they found that none of the CLASS domains were related to children's gains in vocabulary and executive function skills.

The ELLCO (Smith et al., 2008) assesses classroom environment and teacher-child interactions, specifically related to language and literacy in early childhood classrooms. The ELLCO includes 19 indicators within five key literacy elements: classroom structure, curriculum, the language environment, books and book reading, and print and early writing supports, and the rating scales range from 1 (Deficient) to 5 (Exemplary). The ELLCO had been broadly used to assess the impact of classroom environment on children's language and literacy development. Neuman and Cunningham (2009) studied the impact of professional development and coaching on early language and literacy instructional practices measured by the ELLCO and the Child/Home Early Language and Literacy Observation (CHELLO) in center-based and home-based care settings. They found that a combination of coaching and course-based professional development improved the quality of language and literacy practices. Similarly, Dickinson and Caswell (2007) used a quasi-experimental design and investigated the impact of an in-service intervention program the Literacy Environment Enrichment Program (LEEP) on preschool classroom practices. The ELLCO was used as one of the tools to measure language and literacy instructional practices. They found that the LEEP had positive effects on teachers' classroom practices, particularly those associated with literacy. In addition, Xu et al. (2013) examined the effects of a federally funded early literacy project on preschool age children's school readiness skills that were measured at child level, classroom level, and from the family/home environment. Both ELLCO and CLASS were used to measure classroom environment and instructional practices. They found significant improvement in classroom environment based on the pre- and post-test of ELLCO.

The TPOT (Hemmeter et al., 2014) is often used to examine the implementation of the Teaching Pyramid Model. This tool focuses on social/emotional development (as compared to the CLASS and ELLCO, which focus more on the cognitive domain). The TPOT is organized around three subscales (Using Effective Strategies, Key Practices, and Red Flags) and has a total 32 items. The Key Practices subscale aligns with the Teaching Pyramid model and focuses on strategies related to social and emotional support for young children (D'Amico et al., 2019). Red flags indicated those instructional techniques that contradict the Teaching Pyramid model. The TPOT is typically conducted for a minimum of 2 h and should include observations of center or free play in addition to a teacher-led task. Following a TPOT observation, there should also be a follow up interview to discuss practices that were not observed in the two-hour period (Hemmeter et al., 2014). Regarding the impact and implementation of the Pyramid Model, multiple studies found that training plus coaching is effective for increasing teacher use of the Pyramid Model practices (Hemmeter et al., 2016, 2021). A recent study by Golden et al. (2021) used a multiple probe design and investigated the effectiveness

of training plus reciprocal peer coaching on teaching teams' implementation of Pyramid Model within and across early childhood teaching teams. They found that this method is effective and efficient for early childhood teaching teams to increase their use of Pyramid Model practices. In addition, studies also found that the implementation of Pyramid Model practices is associated with children's increased social skills and decreased challenging behavior (Hemmeter et al., 2016, 2021). Similarly, Branson and Demchak (2011) studied toddler teachers' use of Teaching Pyramid practices and the relationship between these practices and classroom quality. They found that toddler teachers used strategies to build positive relationships with children and families rather than explicitly teaching behavior expectations, social skills, or problem-solving skills to children.

Methods

To address the research question, What does it mean for a school district/consortia to effectively use standardized assessments to support instruction at the 4K level?, we used a collective case study approach (Yin, 2017) to examine three separate cases to determine how they implemented annual project activities outlined in their individual grant proposals and the resulting impact of these activities on teacher practice (as measured through their chosen teacher-child interaction measure). As stated, the three cases chosen for this study were each awarded three years of funding at the state level to support innovative professional development initiatives targeting 4K teachers and students. The districts were able to choose a topic or topics of focus (including, but not limited to, literacy, mathematics, language development, and social and emotional development). The main requirement for funded projects (beside budget approval) was to implement standardized assessments that would help to support and evaluate project activities. These standardized assessments needed to include a measure of teacher/child interactions.

This work is grounded in an interpretivist paradigm with an ontological view that reality is social constructed and changing (Glesne, 2016). As participants have multiple perspectives and each case is bounded in its own context, it is necessary to look for commonalities amongst cases to identify potential truths within their lived experiences. To that end, each of the three districts/consortia chosen for this work conducted ongoing professional development (as outlined in their Community Block Grant proposals) and implemented pre/post teacher-child interaction measures to examine the impact of these professional development activities on teacher practice. To be clear, the data reported by districts/consortia was secondary in nature, as such the authors of this paper only used district conclusions as part of the overall data set for these case studies. No initial datasets were provided for additional analyses, leading to the quantitative data examined only in a descriptive manner for the purposes of this work. In addition to examining these data for commonalities, the research team conducted mid-year and end of year interviews (each year for three years) with participants from each case to determine perceptions of grant activities and their view of the chosen standardized measure. For each case, pre/post data and interview data were analyzed using inductive methods to determine how these standardized measures were used to inform teacher practice. A narrative approach was taken to examine the stories from each of the project leads to determine their perceptions regarding the use of teacher/child assessments in relation to their work. First steps for data analysis included repetitive readings of the transcripts to reduce bias, then identifying and extracting themes from each interview relating to the research question (Yin, 2017). A secondary analysis of interviews across cases occurred following individual analyses to determine overall outcomes.

Participants

The participants from this study were comprised primarily of the project leads for each of the three district/consortia sites for interview data collection. For Case One (District A), two primary project leads were recruited for interview data collection, the early childhood district coordinator and the director of curriculum and instruction. For Case Two (District B), a larger group of representatives, including the executive director of the county First Steps office, the primary First Steps technical assistant, the school principal, and the district Assistant Superintendent, comprised the project leads. For Case Three (The Consortia), the project leads included the early childhood coordinator for the district and an early childhood consultant that also aided in project evaluation. Each of these project leads provided data results for their individual projects and participated in ongoing interviews regarding their projects on an annual basis for each of the three years their projects were funded.

The data results provided by each district included district level participants that were recruited by the project teams. These participants differed based on the goals of each project. Case One (District A) reported a total of seven schools with 34 4K classrooms and 68 teachers involved in the project by the third year, impacting a total of 761 students. Case Two (District B) reported a total of five schools with nine 4K classrooms and a total of 18 teachers, impacting a total of approximately 180 students by year three. Case Three (The Consortia) included a total of seven school districts. They reported a total of 26 schools with 127 4K classrooms

and a total of 234 teachers by the third year, impacting a total of approximately 1500 students.

Results

What follows is a description of results from each case in terms of project purpose (including activities and participants), assessment results, and interview results.

Case One (District A): Focus on Language and Literacy

Purpose

In addition to expanding the amount of full day 4K classrooms across this district, School District A had two primary goals across three years of their grant activities. The first goal was to provide additional literacy-focused experiences focused on 4-year-olds across the district and the second was to improve and increase libraries in both classroom and home environments to highlight rich oral language development in 4K children. In the first year of the grant, 4K students across the district received a package of 50 books that had also been used during classroom instruction to enhance their home libraries. This initiative continued during the next two years of the grant with the school district providing around 20 books to each 4K student and family. This continued implementation was a focused strategy geared towards providing repeated exposure to texts in both home and school environments (D'Amico et al., 2019). Through this initiative, teachers in the district encouraged families to read these stories as they were being read in the classroom to facilitate a repeated reading strategy. To increase opportunities for high-quality literacy-based instruction, the district used the ELLCO to determine overall strengths and weaknesses in terms of literacy across all district 4 K classrooms and use these data to inform ongoing professional development. These ongoing initiatives were implemented across 7 schools, within 12 4K classrooms, and had a direct impact on over 600 students throughout the duration of the grant, as reported by the project team. A project lead at each school (oftentimes an early childhood coordinator for the district) was the primary person leading the data collection.

Table 1 ELLCO results (scale, 1–5)

	General Classroom Environment		Language and Literacy		Number of Classrooms
Year	Pre	Post	Pre	Post	
Year 1	3.3	4.2	3.3	4.3	6
Year 2	4.3	4.6	4.4	4.6	12
Year 3	4.3	4.8	4.4	4.9	12

This person collected the data in the beginning and end of the school year. Individual schools decided how to use the data, oftentimes having data meetings where the teachers and coordinator would meet to discuss individualized results. However, the district as a whole used the data to inform professional development initiatives for 4K teachers throughout the duration of the project geared towards literacy classroom practices.

Assessment Results

An examination of three years of ELLCO results (2017–2019) showed classroom interactions and environment improving in all 12 district classrooms. In year one of the grant (2016–2017), no classroom scored at the highest level on any of the five ELLCO domains. However, by year three of the grant (2018–2019), 50% of participating classrooms received the highest possible score in Books and Print/Writing; 67% of classrooms in Curriculum; and 75% in Classroom Structure and Language (D'Amico et al., 2019). Table 1 shows ELLCO results across the three years of funding.

School District A also reported overall outcomes of the grant in year three. Although student level data was not a requirement of the grant, this district wanted to compare outcomes from the teacher/child interaction measure to outcomes on a student-focused measure to better understand connections between interactions and student growth. Included in this report was an analysis of 4K student level data focused on literacy fundamentals gathered through the Phonological Awareness Literacy Screening (PALS) assessment created through the University of Virginia. District A set a target goal for 4K children that at least 80% would meet Spring PALS Developmental Targets. This goal was established for each year of the project. Findings from year three indicated increased percentages for meeting/exceeding expectations across PALS domains for the 2017–2018 cohort. This trend continued in 2018–2019 with 88–98% of children meeting/exceedng expectations across PALS domains on the spring implementation. Further, the district also examined student level data at the kindergarten level in year three to develop and understanding of school readiness as children transitioned from 4K to kindergarten. On a state-developed 5K assessment (the South Carolina Kindergarten Readiness Assessment), there was an overall increase (from 20% to 2017 to 27% in 2018) of 4 K graduates entering kindergarteners in the "Demonstrating Readiness" category (D'Amico et al., 2018).

Case Two (District B): Focus on Assessment *as* the intervention

Purpose

For each of the three years in School District B, their main project goal targeted creating and sustaining 4K learning environments categorized as high quality (based on assessment data) across all district publicly funded 4K programs. This initiative supported six schools across the district, 16 K classrooms (including those in Head Start settings), and approximately 314 students across the three years of the grant, as reported by the project team. To move towards this vision of high-quality early learning environments, the school district partnered with two early childhood-oriented community organizations to implement a Quality Improvement and Rating System (QRIS). This QRIS utilized an ongoing professional development and formative assessment model for examining, supporting, and sustaining high quality early learning environments (D'Amico et al., 2018). As part of this QRIS model, Technical Assistant Specialists (TAs) collected data through ongoing assessments (such as the CLASS), conducted reflections sessions with 4 K teachers and teacher assistants focused on outcomes from these assessments, and implemented sustained professional development and personalized support. The methods in this project differed from other funded programs as assessment was the driving force behind all grant related goals. In other project, the assessment acted as the evaluation of activities (often related to mathematics or literacy). In this project, using the assessment to drive professional development was the primary focus. The QRIS teams sought to convey to participants the value of assessment as a means to drive instruction across content areas.

As the QRIS team was comprised of early childhood experts outside of the 4K-12 public school system and largely worked to support public and private childcare settings, creating a sustainable and purposeful partnership with district 4K teachers was seen as a challenge by community partners. The director of one of these early childhood partners stated during post interviews, "School district and individual 4K teacher needs are different than what they might need in a private childcare setting" (Project Lead, personal communication, April 2018). To alleviate this concern, the TAs and 4K teachers worked together in the beginning of the year to set up district 4 K classrooms in a research-based manner. Through this collaboration and hands-on approach from the TAs, a strong partnership was established and maintained throughout the year. As stated, the overall purpose of the project focused on using assessment data to inform teacher practices. To that end, following data collection for each CLASS implementation, the TAs met individually and collectively with 4K teachers to discuss results and target areas for support through professional development and coaching.

Assessment Results

Though the CLASS was implemented multiple times throughout the year across district 4K classrooms, the project team reported end of year CLASS scores to examine changes over the three years of the grant. These results are included in Table 2 below. Scores improved across the seven subscales of the CLASS with the most growth seen in Classroom Organization. While growth occurred in the Instructional domain of the CLASS, the change was less than the Emotional Support and Classroom Organization domains (by a marginal amount). These results are not surprising given the focus of professional development on improving early learning environments. The project team described 4K teachers focusing on improving all aspects of classroom quality measured by CLASS but emphasizing thought-provoking, person-centered questioning strategies during center time and increasing intentionality around learning activity development.

The project team also used the Early Childhood Environmental Rating Scale- 3rd Edition, ECERS-3 (E3), developed at the Frank Porter Graham Institute, as a secondary benchmark of classroom environment quality. The E3 observation tool is commonly used to provide a holistic view of the classroom environment in a childcare or early childhood setting. The instrument uses a seven-point scale and is comprised of 6 domains: Space and Furnishings, Personal Care Routines, Language and Literacy, Learning Activities, Interaction, and Program Structure (D'Amico et al., 2019). Across settings in this project, growth was identified from pre- to post-implementation of the E3, and parallels were drawn between the E3 and CLASS results. In particular, gains related to using play-based experiences to engage children in learning and encouraging a child-centric environment

Table 2 CLASS results (scale, 1–7)

	Emotional Support		Classroom Organization		Instructional Support		Number of Classrooms
Year	Pre	Post	Pre	Post	Pre	Post	
Year 1	5.5	6.0	5.1	5.5	3.6	4.2	3
Year 2	5.1	6.1	4.6	5.8	3.3	4.2	5
Year 3	5.7	6.1	5.3	5.8	2.8	3.1	16[a]

[a]Each year classroom settings were added to the project

for learning emerged. Professional development connected to these results included task-focused sessions for revising 4K schedules to support children's overall needs. Further, the District B team also implemented the PALS assessment to examine student level data in comparison with teacher/child intearctions. Data showed improvement across all skills measured by the PALS. By the end of year 3, scores on the PALS showed gains across domains with print word and rhyme awareness yielding the lowest scores of 77.2% of children meeting/exceeding expectations in print word and 77.6% of children meeting/exceeding expectations in rhyme awareness (D'Amico et al., 2019).

Case 3 (the Consortia): Focus on Social Emotional Growth and Development

Purpose

The third project represented participants from multiple school districts (starting with two districts in year one and increasing to seven districts and Head Start by year three). A total of 29 schools, 113 classrooms, and over 1800 students were directly impacted by grant activities over the course of the three years of implementation. This early childhood 'Consortia' of school districts focused their work in Year One on teacher/child interactions with strategies connected to the Teaching Pyramid Model in addition to improving 4K literacy and numeracy activities across each district. However, the Consortia quickly adapted this plan to focus solely on social/emotional development and teacher/child interactions when evaluating project activities and realizing the large scope of what they had originally set out to accomplish.

This change was seen as a positive revision for a more focused project as the project team indicated that a smaller focus could potentially allow for a stronger impact on 4K children in the Consortia. To better understand classroom and teacher needs related to children's social and emotional development, the Consortia implemented the Teaching Pyramid Observation Tool (TPOT). A team of observers (including the district early childhood coordinator, project evaluator, and selected lead teachers) completed the TPOT with classroom teachers for each iteration. As with the other cases, results were used to inform ongoing professional development topics throughout the school year. As the years of the project progressed, this professional development had to be differentiated to meet the needs of returning participants and those who were just beginning.

Assessment Results

Table 3 shows combined TPOT results for all participating district throughout the three years of the project.

Overall results reported by the consortia in year three show TPOT scores on Key Practices (Items 8–11) increasing across districts. These items measure teachers intentional teaching of social skills (D'Amico et al., 2019). While the graph above shows cumulative data, individual district growth on these key practices were as follows: District 1 = 24.5%, District 2 = 11.75%, District 3 = 1.68%, District 3 = 21.5%, District 4 = 15.3%, District 6 = 27.9%, District 7 = 86.7%. In addition to these increases in Key Practices, results also showed increases from pre to post TPOT implementation in positive teacher-child interactions as measured by Key Practice 3. As Table 3 shows combined scores, a breakdown of Year 3 scores for each district were as follows: D1 = 86 pre, 90 post; D2 = 93 pre, 93 post; D3 = 86 pre, 86 post; D4 = 93 pre, 94 post; D5 = 80 pre, 84 post; D6 = 85 pre, 95 post; D7 = 77 pre, 85 post; Head Start = 89 pre, 90 post (D'Amico et al., 2019). Although the pre/post scores for teacher-child interactions do not seem like a large shift (less than 10% overall), this was an area on the TPOT was identified as an area of strength for teachers in this consortium at the beginning of Year 3. Scores on the pre TPOT administration ranged from 77 to 93 while post ranged from 84 to 95, showing an overall shift in positive practices.

The TPOT also measures incidences of challenging behaviors reported in a classroom setting, a key indicator in understanding the overall social/emotional health of a classroom. In Year 3, results showed improvement in student behavior and reduced challenging behaviors across sites (a decrease of 37% from pre to post in Year 3). Further, sites across this consortia reported decreased referrals to principals related to behavior concerns by the end of Year 3. The project team attributed these shifts to improved teacher/child interactions and teacher implemented strategies for supporting social and emotional wellbeing of their students. Finally, the Consortia reported growth in student

Table 3 TPOT Results

Year	Key Practices (Percentage)		Red Flags (Amount)		Incidents (Amount)		Effective Strategies (Amount)		Number of Classrooms
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
Year 1	78%	86%	11%	6%	N/R	N/R	N/R	N/R	23
Year 2	79%	86%	6.5	3.3	31	25	N/R	N/R	85
Year 3	77%	83%	124	57	65	21	32	21	113

level data by the end of Year 3 as measured by the PALS assessment. At the beginning of project, goals for PALS assessment results were established for districts across the Consortia. As a group, they set benchmarks at 95% for all PALS domains. Unfortunately, these benchmarks were not met (student scores ranged from 64 to 96% meeting/exceeding expectations by the end of Year 3). However, results show a large amount of growth within each domain of the PALS when comparing results from previous implementations of the PALS assessment. When examining percentages of children who met or exceeded expectations in the Print and Word Awareness domain, results increased from 10.8% meeting or exceeding in pre assessments and 64.6% of children met or exceeded expectations in the post assessments. While the 95% benchmark was not met, significant growth occurred, and the Consortia largely attributed this growth to the targeted professional development occurring during the project.

Results Across Cases

Interviews were conducted with each project team at the end of each year of grant implementation. Findings from these interviews centered on four themes: professional development, partnerships, perceptions of teacher/child interaction assessments, and common successes and challenges across projects. What follows is a description of each of these themes.

All three projects of focus indicated a focus on professional development aligned with the teacher-child interaction measures used within the scope of their project to support participant understanding of the purpose of these assessments and how to best use gathered information to inform instructional practice. Professional development across these projects also focused on supporting high-quality learning environments and on instructional strategies (specific to literacy for all projects and including a focus on STEM and mathematics for two out of the three projects). Table 4 outlines the total professional development activities occurring for each project in just the third year of grant implementation. While these number were slightly different each year of the grant, overall, each project had a sustainable annual impact on a comparable number of teachers.

All project teams identified the importance of partnerships to achieve grant success. Partnerships between school districts and with community organizations allowed for increased participation and impact for children, increased expertise for supporting the classroom environment, and increased access to extra funding or materials to support grant activities. Over the three-year duration of these grants, each project partnered with at least one other school district in a neighboring community. The Consortia went beyond this goal to form partnerships by year three with a total of seven school districts. Further, each of these projects included Head Start settings within their communities in all professional development activities, recognizing that the students in these Head Start settings were a large proportion of the kindergarten pipeline entering each public school setting. While the Consortia and the District A project sought partnerships with content experts from higher education settings to provide professional development, the District B project utilized partnerships between the school district and community-based organizations as the primary vehicle for professional development experiences. All project teams highlighted the importance of these partnerships in ensuring project success.

Table 4 Year 3 Professional development

District/Consortium	PD Sessions Completed	Participants Attended
District A	17	240
Consortia	108	1,115
District B	154	47

Across interviews, perceptions of the teacher/child assessments were positive regardless of the project focus. The variation between the three assessments aligned with the varied needs of the grant recipients. For example, District A chose the ELLCO because "the tool worked well for [their] program goals." If district goals were more "holistic," then they could have potentially "wanted to look at something like CLASS" (Project Lead, personal communication, May 2018). Project teams often described teacher perceptions of these assessments as useful and helpful. Teacher participants were also included in these conversations and one described her view of the assessments as a way to engage in meaningful conversations, "By working with us side by side in the beginning of the year, they freed you up to focus more on things that you would normally slight. So when I started, I was able to work with the kids and see where they were" (4K teacher, personal communication, May 2018). Another stressed the role of assessment as intertwined with professional development and the importance of both in supporting instructional practice, "I'm a first-year teacher so it has really helped me. I haven't really had experiences in college on social emotional [development]. In college, we focused on academics. So, it's really helped me understand their needs as four-year-olds" (4K teacher, personal communication, May 2018). Of the three, ELLCO specifically focus on early childhood while the remaining two span the PK-12 spectrum. CLASS broadly assesses classroom quality in PK-12 classrooms, where the ELLCO focuses on the practices and environmental supports that influence literacy and language development. The TPOT measures how well teachers implement the 3-tiered Pyramid Model, which highlights practices that support the development of

children's social competence. Assessments were most often used as pre- and post- data collection tools. Only one district mentioned collecting data at the mid-point. Overall, it appears that the introduction of these interactional measures was well-received as a "support tool, not a high stakes evaluation tool" (D'Amico et al., 2019). While there was some resistance, most teachers were "open" and "willing" participants. To address any resistance and increase buy-in, teachers were trained on the tools. As a result, participants (both staff and teachers) were described in interviews as "reflective" practitioners, using assessments to improve their classrooms in the physical and instructional domains (D'Amico et al., 2019).

We asked each project team to describe the overall successes and challenges related to each of their projects throughout the duration of grant funding (three years). While each project had individualized successes and challenges related to areas such as curriculum implementation, administrative perception, 4K enrollment, and family/community involvement, there were also common perceived successes and challenges across the three cases. Table 5 outlines these commonalities, relating to overall participant motivation, assessment implementation, and professional development (both at the individualized level and the collective level through the use of partnerships as described above).

The biggest challenge identified across cases was a lack of clarity on how to sustain the positive practices related to assessment implementation and professional development that had been refined over each three-year project. While it was clear that each case saw success in assessment strategies and professional development during the project, project teams were vocal about the need for continuing support at either the state or district level to continue with these initiatives after grant funding ended.

Discussion

This article describes strategies for conducting assessments in a systemic manner and provides examples of how teachers have used these assessments as a means to guide their own development and practice. Specifically, the research question of focus examined what it means for a school district/consortia to effectively use standardized assessments to support instruction at the 4K level. For each of these three cases, the connection between professional development goals and standardized assessments increased the utility value of the assessments for both teachers and administrators. In general, each of the three cases presented here used assessments as a complement to a professional development initiative. While the topics and measures were different across each case, the overall goal of improving instruction was a common theme. In case two, District B used CLASS results to create a professional development agenda focused on topics like play, child growth and development, and powerful interactions with children. The Consortia in case three focused primarily on the Pyramid Model as a vehicle for improving the overall social and emotional growth of students. Results from TPOT iterations highlighted the need to focus on positive interactions and perceptions related to behavior management in ongoing professional development. In the case one District A, pre ELLCO results showed the need for professional development and coaching

Table 5 Successes and challenges across projects (D'Amico et al., 2019)

Strategy	Successes	Challenges
Classroom Support and Participant Motivation	• Positive relationships were established between professional facilitators or TAs and 4 K teachers • 4 K teachers indicated grant partners provided guidance and were supportive during the projects	• Assessments revealing a lack of supplies, furnishings, materials or a need for ongoing PD resulting in budget barriers when costs were beyond the scope of the grant budget • Clear plans to determine sustainability of participant motivation were not established across projects
Assessment Implementation	• Each project implemented focused professional development intentionally targeting the assessments and research based to increase teacher buy-in • Each project successfully implemented proposed assessments across all participants	• When considering implications for implementing these projects on a larger scale, project teams indicated concern regarding time management for effective assessment implementation
Professional Development	• Assessment results were used to implement individualized monthly professional development experiences • Assessment results were used to intentionally implement needs-based professional development experiences for both grant participants and for early childhood educators external to the projects • Recruitment of regional experts to develop and implement professional development experiences • Participant compensation supported through budget funds to increase teacher engagement	• Clear plans for determining sustainability of professional development without grant support were not established across projects but will likely require reliance on in house facilitators rather than recruiting external experts to support professional development.

experiences geared toward building high quality literacy environments and using effective literacy instruction.

One of the primary rationales for using standardized assessments is to understand student capabilities in comparison with a set of criteria or in comparison with each other. However, when these data are used to make judgements about teacher quality, a host of confounding variables make student assessments somewhat difficult to interpret when trying to understand the contextual nature of teaching (Goldhaber, Lavery, & Theobald, 2015).

Instead of using child assessments as an indicator of teacher quality, these cases provide evidence of how standardized measures focused on teacher-child interactions yield more interpretable results and are met with less resistance at the school level (as described by the project teams for each of these cases). Best practices related to early childhood education include using assessment as a form of intervention to improve teacher practice. Examining these assessments in a formative, rather than summative, manner allow these assessments to support instructional practices. With this clear connection, it makes sense to intentionally connect professional development initiatives to assessment results.

In interviews with district/consortia partners, participants linked Community Block Grant initiatives to such outcomes as a school of focus being removed from "priority" status by the South Carolina Department of Education; improved coaching and classroom quality related to social emotional and literacy skills; improved transition to kindergarten; and improved family connections and support related to kindergarten readiness and school success. In addition, some districts noted improvements in 4K student assessment results (PALS) and 5K assessment results (SC Kindergarten Readiness Assessment) based alignment of teacher/child interaction measures and professional development.

Overall, teacher participants had positive perceptions of the interaction assessments used in each of these projects. They identified these particular assessments (CLASS, TPOT, and ELLCO) as useful and purposeful. They recognized how the assessments informed professional development and saw applications within their own classroom settings related to assessment outcomes. These outcomes hold the potential for more teacher driven decision-making related to assessing quality and determining professional development. A primary consideration for teacher motivation related to assessment is to see the utility value of a chosen assessment. It was clear in this study that participants across cases were able to use their chosen teacher/child interaction measure to make informed decisions between the project teams and the participants that held positive implications for classroom practice. An interesting commonality across all three grants was the implementation of a secondary assessment focused on student outcomes (PALS, KRA) as project teams wanted to evaluate the impact of project activities on 4K students. In post interviews, the project teams recognized the potential connectivity between the teacher/child assessment and the child focused measure. If the teacher-focused assessment was positive, then the student outcome data was also positive (within the realm of these examples). This potential connection is important for consideration by school districts and state and federal education entities when deciding upon measures to assess classroom quality.

Recommendations

This article reports on the results of a three-year grant initiative across three separate projects to better understand the role teacher/child assessments can play in supporting teacher quality. While these results across projects are illuminating, further work should be done to explore how these assessments might be used in lieu of student-focused assessments to make decisions at the district, state, and national level. Initial explorations of student outcome data for two of these grant projects (PALs and KRA) indicate a potential correlation between student outcomes and teacher/child interactions. While focusing on teacher/child interaction, measures can remove some of the contextual variables (e.g., student and community demographics) and limitations (e.g., lost instructional time) associated with standardized testing, it is important to determine if teacher/child interactions have a causal effect on student outcomes. Future studies might explore these connections by examining outcome data for both types of measures implemented in a single setting.

In interviews across projects, participants stressed the importance of partnerships in achieving project goals. These partnerships varied from other school districts to community organizations and institutes of higher education. While partnerships may have differing goals, they seemed vital to supporting high quality learning environments for young children. Future explorations of this support may be useful in developing initiatives geared towards improving schools across the country on a broader scale.

In terms of these specific projects, limitations were present that could be addressed in future studies. Interview data was gathered from the project team for each grant but did not go beyond that level to interview teacher or student perceptions of grant initiatives. Further, while longitudinal data was examined in terms of teacher/child interactions to determine teacher growth over the three-year period, outcome data was not examined as these students progressed through kindergarten and first grade. Future explorations of these projects could include a specific focus on teacher and

student perceptions and could begin to explore the longitudinal impact from the student perspective in terms of school readiness or explore the use of the teacher/child interaction measure in settings beyond 4K.

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