

CEMETR-2023-02
January 2023

CEME Technical Report

The Center for Educational Measurement and Evaluation

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Fidelity Practices with the North Carolina
Early Learning Inventory

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A PUBLICATION OF
THE CENTER FOR
EDUCATIONAL
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**Examining Kindergarten Teachers' Implementation Fidelity Practices with the
North Carolina Early Learning Inventory**

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Abstract

This grounded theory study seeks to 1) understand what barriers North Carolina kindergarten teachers experience as they implement a new authentic formative assessment, the North Carolina Early Learning Inventory (NC ELI), and 2) identify factors that increase implementation fidelity with the new measure. Data were collected from 10 teachers, from three regions in North Carolina, using semi-structured interviews and analyzed using constant comparative methods. Findings suggested that teachers have strong formative assessment practices, yet unclear expectations and insufficient training with the NC ELI contributed to poor implementation practices. The North Carolina Department of Public Instruction and school districts across the state should ensure adequate training and support to mitigate the gap between teachers' capacity for engaging in formative assessment and their use of the NC ELI.

Purpose

In 2019 North Carolina adopted a new Kindergarten Entrance Assessment (KEA) measure known as the North Carolina Early Learning Inventory (NC ELI). The inventory includes 14 items from the full authentic formative assessment measure, *Teaching Strategies GOLD*[®]. The NC ELI was designed to help teachers and families understand each child's strengths and needs and help teachers plan for instruction (North Carolina Department of Public Instruction, n.d.). While there is evidence to support that the assessment is developmentally appropriate for documenting young children's current knowledge and skills (Lambert, 2020), the utility of the assessment is contingent on factors that are both within and beyond teachers' locus of control.

The present study seeks to identify the barriers that kindergarten teachers face as they implement the NC ELI and the factors that support implementation fidelity. To identify factors that are both within and beyond the control of kindergarten teachers, we sought to answer three research questions, including:

1. How do North Carolina kindergarten teachers understand and use formative assessment in their classrooms?
2. What barriers and benefits do kindergarten teachers experience when attempting to apply outcomes from the NC ELI to inform their practice?
3. What factors would facilitate improved implementation fidelity experiences with NC ELI?

Findings from this study will be shared with the North Carolina Department of Public Instruction for three primary purposes, including, 1) providing recommendations for meaningful professional development opportunities for kindergarten teachers and 2) mitigating larger and more systemic barriers and 3) replicating practices that support strong implementation fidelity with the new measure.

Perspectives/Theoretical Framework

The NC ELI is an observation-based measure and includes 14 items from the full measure, *GOLD*[®]. Theoretically, assessment occurs when teachers engage in the formative assessment process and collect evidence during routine classroom activities, analyze and enter evidence into the secure electronic platform, and make placements along developmental and learning progressions. Teachers use preliminary placements to differentiate and plan for future instruction. Using the NC ELI as intended requires teachers to have a robust prerequisite knowledge of the formative assessment process. However, previous research suggests that teachers experience numerous barriers integrating formative assessment practices into routine teaching and learning, including insufficient embedded support (Schildkamp et al., 2020), competing demands, (Little et al., 2020) and underdeveloped assessment literacy skills (NCTE, 2013; Wiley & Lyon, 2012).

While formative assessment bolsters strong potential for positively and significantly impacting student achievement, inadequate teacher training has led to mixed outcomes in classrooms (Schildkamp et al., 2020, Mitten et al., 2017; Sabel, et al., 2015; NCTE 2013; Bennet, 2011; Black & William, 1998). Schildkamp et al. (2020) found that teachers were more likely to receive a set of prescriptive directions for implementing formative assessment practices, rather than contextualized, individualized, and ongoing support. Additionally, teachers must have strong assessment literacy skills, defined as “a deep understanding of *why they assess, when they assess, and how they assess* in ways that positively impact student learning” and an inquiry lens that allows them to ask questions of the data, make inferences about evidence, and adjust instruction accordingly (NCTE, 2013, p. 3). These skills, while critical to the success of formative assessment routines are often left out of teacher preparation programs.

While North Carolina kindergarten teachers must have a strong capacity for engaging in the formative assessment process to implement the NC ELI with fidelity, barriers beyond their abilities may also interfere with fidelity. Researchers have found that teachers’ perceived usefulness and purpose for assessment significantly impacts how data is acted upon for teaching and learning purposes (Harvey & Ohle, 2018; Holcomb et al., 2020). Additionally, teachers often experience competing assessment demands, which can leave them feeling overwhelmed and lead to poor implementation fidelity outcomes (Holcomb et al., 2020; Little et al., 2020; Ackerman, 2018; Harvey & Ohle, 2018).

To achieve implementation fidelity with the NC ELI, many factors must fall into place. North Carolina kindergarten teachers need strong assessment literacy skills and prerequisite knowledge of the formative assessment process. Additionally, teachers need a strong understanding of the purpose of the NC ELI and how the data provided by the NC ELI can be leveraged within their classrooms for teaching and learning. Finally, in the era of high stakes testing and increased accountability measures, teachers need adequate time to understand and implement a new measure with fidelity before more initiatives and competing requirements emerge.

Methods

Research Design

A grounded theory methodology was used to conceptualize both the barriers that teachers face in implementing the NC ELI, as well as the practices and processes that support implementation fidelity with the new measure. Grounded theory was appropriate for the purpose of this study because the goal was to develop contextualized substantive theory rather than merely present descriptive findings. Additionally, axial coding provided an opportunity to look at relationships between procedures and processes to further understand systems of support, contextualized challenges, and resulting implementation practices.

Participants

Participants included 10 female kindergarten teachers, from three different regions, who worked for North Carolina public schools and actively used the NC ELI. Nine teachers in this sample identified as White, while one teacher identified as Black/African American. Participants had between one and nineteen years of experience teaching kindergarten. Most participants' highest education attainment was a bachelor's degree, some participants had earned master's degrees, and one teacher was nationally board-certified.

Data Collection and Analysis

Semi-structured constructivist interviews were conducted with ten North Carolina kindergarten teachers. Interviews took place in person or on Zoom and lasted approximately 45 minutes to one hour each. Interviews were recorded and transcribed. Interview transcripts were read carefully, and line-by-line coding was used to assign open codes. Open coding was focused on actions to preserve the fluidity of participants' experience (Charmaz, 2014). Constant comparative methods were used to compare data with data to find similarities and differences (Charmaz, 2014). Open codes were continually reviewed and compared as they were assigned to categories. Categories were broken down into subcategories to explain unique dimensions. This recursive process of moving between open codes, categories, and subcategories helped us to explore and explain data. Additionally, analytic memos were written to advance categories (Charmaz, 2014). Finally, Axial coding was used to understand relationships between categories, subcategories, and open codes and to synthesize large amounts of data into a coherent story (Corbin & Strauss, 2014).

Data Sources

Data sources include nearly 200 pages of coded and categorized interview transcripts from interviews with 10 kindergarten teachers. Data collection and analysis procedures are thoroughly outlined in the section above.

Findings

The current study sought to answer three research questions, including: 1) How do North Carolina kindergarten teachers understand and use formative assessment in their classrooms? 2) What barriers and benefits do kindergarten teachers experience when attempting to apply outcomes from the NC ELI to inform their practice? And 3) What factors would facilitate improved implementation fidelity experiences with the NC ELI? By answering the three questions under investigation, we sought to identify meaningful next steps for professional development opportunities, identify and mitigate pervasive barriers

to implementing the NC ELI, and highlight practices that facilitate strong implementation fidelity. The findings are organized by research question and provided in sequential order.

Formative Assessment Knowledge and Use

The first research question sought to understand how kindergarten teachers made sense of and used formative assessment in their classrooms. Findings included the development of three major themes, including, context-dependent process, asking questions, and “stops the teaching”. For kindergarten teachers in North Carolina, formative assessment is a context-dependent process. Given the learning context, teachers choose from a range of data collection methods, including but not limited to, using checklists, student learning artifacts, observations, and photographs, and a variety of data analysis methods, including collaborating with peers, using rubrics, counting tallies and calculating percent correct, and comparing work to predetermined learning objectives and exemplars. The second theme that emerged was asking questions. All the teachers who demonstrated strong use of the formative assessment process also asked questions of themselves, colleagues, their students, and the data. This questioning process drove their data collection and analysis process and allowed them to determine instructional next steps and learning goals. The final theme that emerged was “stops the teaching.” Most participants indicated that required assessments consumed a large amount of time and one participant explicitly stated that the process “stopped the teaching.”

Context-Dependent Process

For most participants, formatively assessing students was “a fluid process.” Most teachers demonstrated systematic and robust practices for determining learning goals and objectives, collecting data about what students know and can do, and determining instructional next steps and future learning goals. However, most teachers’ processes were highly dependent on learning goals and learning context. For example, when Ms. Kameron had a student with a social-emotional goal that required the student to take turns. Ms. Kameron staged an opportunity for authentically assessing the child’s progress toward the goal by interacting with the child in a playful situation.

I sit at the table, and I will have a toy. We’ll just start playing and I’ll have my binder next to them. I will start the process by saying, “Oh, it’s my turn. I’m going to do this and then your turn.” And as I do this, I am tallying how many times they can do that, go with me, or if they refuse, I’m taking notes.

In this example, Ms. Kameron was assessing a student’s progress towards a social-emotional skill. Therefore, staging a playful intervention was appropriate. Additionally, Ms. Kameron notes that if the student complies, she tallies the number of times that the student shares the toy. Tallying was appropriate

for this task because it allowed Ms. Kameron to quickly document and quantify the desired behavior. However, if the child does not comply, Ms. Kameron takes notes to qualitatively state what happened. Ms. Kameron said that she revisits information in her binders every Friday afternoon to plan for future instruction.

Another example, where the choice of data collection and analysis methods were dependent on the learning goal and context was when Ms. Canon formatively assessed students on the Math concept of less, more, or equal. Ms. Canon created a worksheet where children were asked to demonstrate their knowledge of the newly taught concept. Ms. Canon said,

They matched the deer and candy corn to decide if there was too little or too much candy corn for each deer in the box. Most students could do it, but a few couldn't. I mostly passed that group off to my teaching assistant for Math. Their Math center involved working on a number line to learn more about more and less and match physical objects at the center to understand when the number of objects is the same or not.

In this example, Ms. Canon discusses creating a worksheet to determine which students had the newly taught math skill of more, less, or equal. She describes how she analyzed the student learning artifacts quickly to form a small group of students who needed more instruction and practice with the concept. In this context, a worksheet allowed the students to demonstrate their knowledge and Ms. Canon to collect information quickly. This quick formative assessment allowed Ms. Canon to act on students' incomplete understandings before moving onto the next math concept.

Another example of context-specific data analysis methods was in Writing. Ms. Rogers shared that the rubrics provided for scoring writing were unclear and possibly inaccurate, which led her to question her process and the scores she assigned. She said,

For more subjective information, I'll take it to someone else and ask a peer, what would you say about this to see if they have the same thinking that I have. And so that helps me get a more true reading on what the data is saying.

In this excerpt, Ms. Rogers' process for analyzing data was dependent on the subject, Writing. Ms. Rogers perceived students' writing as subjective evidence, rather than black or white, or objective evidence. Therefore, Ms. Rogers shared the writing sample with a peer to ensure that she drew meaningful and valid conclusions about the sample.

The finding that formative assessment data collection and analysis procedures are context-dependent has two important implications. For one, teachers of young children need assessments that offer a range of flexible methods for collecting information about what children know and can do across domains of development and learning. A method that is appropriate for collecting information about what children know and can do in mathematics, e.g., a worksheet, may be entirely inappropriate in another

context, such as social-emotional learning. Additionally, the context-specific methods and processes above demonstrate that North Carolina kindergarten teachers understand formative assessment as a short-cycle and authentic process, meaning, data is collected during everyday classroom learning activities, analyzed, and acted upon quickly.

Asking Questions

The second theme that emerged was asking questions. Teachers who deeply engaged in the formative assessment process asked questions of themselves, peers, students, and the data that they collected. This questioning process allowed them to better understand what students knew and were able to do and where to go next.

Self and Peers. Ms. Merchant acknowledged that she felt a lot of pressure to interact with students and collect data simultaneously. Therefore, she said “I try to go home every night and really think about my day and think if I missed anything that was really significant because that happens... I also talk with my assistants and ask what they saw and documented.” Ms. Merchant struggles to collect data and authentically interact with students at the same time. Although Ms. Merchant uses checklists to collect data quickly, she also engaged in critical self-reflection at the end of every day to understand her observations more deeply. She also asks her colleagues what they noticed to triangulate data and get a better understanding of what students know and can do.

Students. Ms. Rogers demonstrated how she used the process of questioning to gather information about what her students know and their approach to solving problems in Math. She said,

What you see in class and how they behave, how they answer questions. So, to me, that is, to me, that's better information than that assessment ever. We'll be looking at what they do, giving them skills, posing questions, and see how they think about it. And not just, what is the answer? Why did you do it that way?

In this excerpt, Ms. Rogers showed how she used questioning to understand how the student arrived at the answer. The questioning process that she used with her students allows her to collect important information about process to inform next steps. This interactive dialogue and questioning practice provides information about process and approach to learning that traditional paper and pencil assessments or worksheets do not provide. This line of questioning is important for teachers of young students who may not be able to articulate their thinking in writing yet.

Ms. Allen also demonstrated how she used the questioning process to understand what her learners know and can do. She said,

Well, I've learned in kindergarten, it's really hard to get them to write down what they know, so there's a lot of talking back and forth. Like we just did a math assessment,

where it was a lot of talking, so it's just asking them questions and having them answer.

There's a lot of prompting.

In this excerpt, Ms. Allen is referencing a math assessment where she asked students to count by 1s, 10s, and demonstrate their knowledge of one-to-one correspondence. Ms. Allen notes that talking to children and asking them the questions verbally is critical to understanding what they know and can do. She states that in kindergarten it's hard to get students to write down their answers and therefore, it is necessary to ask them questions and provide opportunities for them to demonstrate their knowledge verbally.

Data. Ms. Rogers demonstrated how she asks questions of student work to understand what they know and can do. She said,

We're trying to look at writing. What level of writing is this? Because the way the rubrics are written is not clear and the way the rubrics are written, some of my lower writers get a better score than my better writers.

In this excerpt Ms. Rogers models asking questions of the student work sample. She explains that the rubrics that are provided are unclear and therefore, uses questioning to better understand the developmental level of her students. This questioning process not only leads Ms. Rogers to think more critically about the evidence, but it also leads her to ask questions of her peers to calibrate her scoring procedures.

The finding that asking questions drives the formative assessment process could have important implications for future professional development opportunities. For new teachers, or teachers that have a lesser understanding of the formative assessment process, modeling and practicing asking questions of self, peers, students, and data could be an important part of developing assessment literacy. Through the interview process, it became very apparent that teachers with strong formative assessment practices engaged in frequent questioning practices and deep self-reflection to ensure they adequately captured their students' abilities through a variety of assessment strategies.

“Stopped the Teaching”

In contrast to teacher-driven data collection and analysis methods, teachers are also asked to collect information about students' abilities using county- and state-mandated assessments, including, but not limited to iReady, mCLASS, and county-developed mathematics assessments. Most teachers had negative feelings about these assessments. Ms. Allen said,

I guess for the county, they give us the math formative assessment for each nine weeks, that we have to do with each child. We just did it and they didn't have to write anything.

It was a lot of work. I had my teaching assistant help.

Ms. Allen described the math county assessment as a lot of work. During the interview, the tone of her voice changed while discussing the math county assessment. Her tone indicated frustration.

Additionally, Ms. Rogers felt that mCLASS and the county-mandated math assessment “stopped the teaching.” She described the competing interests of teaching and assessment for learning and the assessments that she is mandated to give. She said,

I love because people who aren't in the classroom are always saying, there should be no reason that you have stopped the teaching and I was going, “okay, I want you to come tell me how. You're the big wig. You've got this all worked out. I will become it, teach a lesson, keep the learning going, and do these assessments. You show me.” And until then it has to shut down. And I'm the one that's always the last one, finishing things up because I keep trying to teach, you know, that is supposed to drive your teaching. But if I have no time to do the teaching from the data, because I'm always collecting data, then what's the point?

Ms. Rogers shared deep feelings of frustration with any assessment that did not serve a strong purpose and shut down teaching and learning. She did not feel that the mandated assessments provided useful information because she spends so much time collecting the data, that the information is stale by the time she has time to act on it. Ms. Rogers demonstrated excellent use of formative assessment practices, however within the context of mandated assessments she had very negative feelings.

In discussing mandated assessments, a third teacher, Ms. Lennon described the process as “a necessary evil” and “a pain in the neck.” She said, “we dedicate so much time to that” and it’s “not exactly why I went into teaching.” Ms. Lennon demonstrated a slightly sarcastic and dark outlook of data collection and assessment mandates. She felt that data collection competed with her purpose and daily learning routines.

Findings from this theme have important implications for mandated assessments and future professional development opportunities provided to kindergarten teachers in North Carolina. First and foremost, mandated assessments should not shut down teaching and learning, at least not for prolonged periods of time. If teachers are collecting information that they never have a chance to act on, then they are not effectively engaging in the formative assessment process. Secondly, teachers should be provided with a strong purpose for the one or two appropriate assessments that they are required to do. The NC ELI provides teachers with a tool that allows them to use all their homegrown and varied methods to collect information about what students know and can do in authentic learning contexts. The assessment does not need to shut down teaching and learning and may be a viable replacement for some current measures that do shut down teaching and learning. However, teachers would need adequate training to further understand the capacity of the assessment and use it in a valid and meaningful way.

Barriers and Benefits in Applying the Outcomes of the NC ELI

The second research question examined the barriers and benefits kindergarten teachers experience when attempting to apply outcomes from the NC ELI to inform their practice. While interview transcripts were coded for all ten teachers, the focus on the following section of the report includes three teachers who were generally found to be representative of the three districts represented in this study. Findings for this section included the development of three major themes, including, emphasis equates to importance, purpose drives practice, and reinventing the wheel. It should also be noted that very few teachers reported experiencing benefits in applying the outcomes from the NC ELI. One group of teachers from the same district found it beneficial to use the NC ELI items as a preliminary screener, administered to students during staggered entry days, to develop heterogeneous classroom of varying ability levels. While this was a perceived benefit, it should be noted that this is not a valid use of the NC ELI.

The first theme and barrier, emphasis equates to importance, derived from the language in the state legislative statute specifying one data collection checkpoint by the 60th day of school. School districts adhered closely to the language in the law and did not emphasize continued application beyond the first checkpoint (N.C. § 115C-83.5). All the teachers in this study discontinued using NC ELI after the required checkpoint, believing it was unimportant to their district because they were not asked to continue its application. This diminished its ability to function as an authentic, ongoing formative assessment. The second theme, purpose drives practice, stemmed from a general lack of understanding surrounding the purpose for the NC ELI. Teachers did not have a clear understanding of why they were using the assessment or how scores were reported or used, therefore teachers did not place value on the practice. Finally, the third theme, reinventing the wheel, was associated with training and access. School districts can elect to turn on all the features in the GOLD[®] platform or limit teachers' access to only the 14 items selected for the NC ELI. Without access to the full measure, teachers were unaware of the platform's total capabilities and features. This makes the instrument less beneficial to teachers' ongoing formative assessment practice because they are limited to only 14 skills that may not align with their curriculum and standards beyond the first few weeks of school. Therefore, teachers reinvent the wheel, with significant time devoted to developing homegrown formative assessment practices.

Emphasis Equates to Importance

Each participant shared an accurate understanding that the NC ELI was a readiness assessment that was conducted within the first 60 days of school. Each school, located in different districts and regions across the state, met the required checkpoints outlined by the NC Read to Achieve statute. All participants discontinued use of NC ELI after the 60-day checkpoint because their district did not require further implementation. Districts are informed by guidelines in the Read to Achieve statute. The most compelling evidence for why teachers are not engaging with ELI beyond the 60-day checkpoint can be found in following NC Read to Achieve law related to kindergarten entry assessment.

§ 115C-83.5. Developmental screening and kindergarten entry assessment. (a) The State Board of Education shall ensure that every student entering kindergarten shall be administered a developmental screening of early language, literacy, and math skills within 30 days of enrollment. (b) The State Board of Education shall ensure that every student entering kindergarten shall complete a kindergarten entry assessment within 60 days of enrollment. (c) The developmental screening instrument may be composed of subsections of the kindergarten entry assessment. (d) The kindergarten entry assessment shall address the five essential domains of school readiness: language and literacy development, cognition and general knowledge, approaches toward learning, physical well-being and motor development, and social and emotional development. (e) The kindergarten entry assessment shall be (i) administered at the classroom level in all local school administrative units; (ii) aligned to North Carolina's early learning and development standards and to the standard course of study; and (iii) reliable, valid, and appropriate for use with all children, including those with disabilities and those who are English language learners. (f) The results of the developmental screening and the kindergarten entry assessment shall be used to inform the following: (1) The status of children's learning at kindergarten entry. (2) Instruction of each child. (3) Efforts to reduce the achievement gap at kindergarten entry.

All of the participants were unaware that the data they collect for NC ELI during this 60-day window was used as an indicator of kindergarten readiness on the NC Report Cards. After conversations with members of the North Carolina Office of Early Learning (NC OEL), I learned this information is not emphasized in communications out of a concern that schools will misinterpret kindergarten readiness outcomes as a measure of accountability, which it is not. The readiness score is not used to calculate the schools' report card grade, although it is located on the school report card, leading to a potential misconception. This potential misconception is reflected in a statement provided by one participant when I informed her how ELI data is used to report kindergarten readiness on the school report card: "Now that I know this is on our report card, our school report card for kindergarten, it kind of makes me uneasy. Um, because if there is something, like that I can do, to help us, you know, perform better, then I would want to know about that". Upon realizing her misunderstanding, I quickly corrected her, explaining it is a readiness indicator that demonstrates where students are at when they arrive and it is not a reflection of her practice or the school's outcomes related to kindergarten achievement. However,

if teachers are unaware of how outcomes are used, they place less value on its' usefulness, which directly impacts fidelity.

All three participants stated this process is not “stressed” by their administrators. They did not view it as important because it was not stressed. It was perceived as a task they needed to be completed but it was less meaningful than other initiatives that were emphasized such as MClass or the new LETRS training. This leads to an interesting finding regarding messaging: while no one wants to “stress teachers out” amongst the inherent demands of teaching, what isn't stressed is less likely to be addressed with high fidelity.

Purpose Drives Practice

The three participants' experiences diverged most notably in the training they received regarding the NC ELI. This finding can be presented on a continuum, ranging from sufficient and well-informed training to insufficient training. The participant who reported the highest level of training was able to provide resources that she used during planning. She demonstrated how she uses the progressions as references when analyzing student data and making ratings. She felt that ELI provided meaningful information to inform her practice as she became acquainted with her students. Her district even provided teachers access to inter-rater reliability training videos, although they were not expected to obtain inter-rater reliability certification. Her definition of formative assessment was the most accurate of the participants interviewed “I would say that formative assessment is something that I do that's sort of ongoing so that I can see where my students are...how they're growing, changes that I need to make either in whole group instruction if it seems like everybody isn't getting it, or you know...I need to make changes in groups of kids that I am pulling to do small groups or one on one kind of help”

Somewhere in the middle of this training continuum is our second participant. The school district provided her with a Canvas course to view independently. This resulted in gaps of understanding but a working knowledge of the ELI. Her school authentically collected evidence during the 60-day window and rated students in the platform according to the developmental progressions but did not use the data to inform instruction. The process felt less meaningful to her and the teacher expressed a little frustration with spending her evening entering evidence: “I asked myself, where does this information go? Who uses this? And what do they do with it?...um, that's what I asked myself amongst my three children of my own, you know, needing me in doing things, and I'm just like oh, my gosh, this needs to be done at school.” However, this participant remained open to learning more and was receptive to receiving additional training if it had capabilities that she was unaware of to improve her instructional practice.

The third participant experienced the least effective training model. As a teacher new to kindergarten, she did not receive any training. Her school pulled items from NC ELI to create a checklist for collecting data, which is permitted in the law. Teachers in this district use the data collected to aid in the composition of balanced classrooms. The ELI items were added to a screening card and each teacher was assigned an item they would observe on the first few staggered entry days of school before classes had formed. At this point, teachers have not been assigned students, so the activities are staged and do not occur as part of authentic classroom practice by the child's teacher. This violates the spirit of authentic formative assessment, but it does function as a screener, which is one component of the Read to Achieve mandate. This school has found a meaningful way for this process to serve multiple purposes. The unintended consequence of this alternative purpose is teachers have developed even less of an understanding of the true purpose of NC ELI as an ongoing authentic formative assessment. This is best captured in one teacher's response when asked how she felt about the adequacy of her training "Considering I didn't have any, it would've been nice to know more of the why, why am I doing this? What is it going for? What's the purpose? Cause once I did it, I'm not gonna lie, I didn't look at it again because I didn't know I was supposed to."

Reinvent the Wheel

Two of the three participants experienced limited exposure to all the capabilities the measure has to offer. They were unaware of how this measure aligns with the standards, how it can be used in lesson planning, as part of progress monitoring, or as a tool for tracking IEP objectives. It isn't being used to inform small groups for targeted instruction, or to facilitate individual student growth and development. However, it should not be inferred that these teachers are not engaging in formative assessment practices. They certainly are and they provided many examples of checklists, data sheets, and data binders they created to track student growth. They explained how they collect this data in small groups or through observation of whole group activities. They use that data to create flexible groupings based on student needs. Unfortunately, they do not realize the capacity the NC ELI has to streamline their process, so they "reinvent the wheel" with homegrown teacher made formative assessment strategies.

Improving Implementation Fidelity

The third question asked what factors would facilitate improved implementation fidelity experiences with NC ELI. All codes in this category could be reduced to one pervasive theme: *Enhanced training*. The COVID-19 pandemic inhibited teachers' access to adequate training with the newly revised NC ELI, formerly the NC KEA. Intentions to improve previous issues with implementation were thwarted by remote learning models. Training varied by district but was universally inadequate for all the

participants in this study. Teachers with the most exposure to training demonstrated a more positive disposition about the potential for NC ELI to inform their practices, while teachers with little to no training demonstrated an increase in negative comments and attitudes about NC ELI and its utility.

Discussion and Recommendations

Capacity for Formative Assessment

Findings for the first research question resulted in the development of three major themes, including, context-dependent process, asking questions, and “stops the teaching”. These themes were derived from 10 kindergarten teachers’ experiences with formative assessment and highlight many strong formative assessment practices amongst kindergarten teachers in North Carolina. Findings included that formative assessment is a context-dependent process, where teachers must consider the content area and skill or knowledge to select appropriate data collection and analysis procedures. Additionally, teachers ask questions of themselves, peers, students, and the data to drive the formative assessment process and draw valid conclusions about the data. Finally, most teachers shared frustrations about state-mandated and county-mandated assessments. Teachers felt these assessments were time-consuming, frustrating, and “stopped the teaching.”

Schildkamp et al., (2020) said the formative assessment process is carried out authentically when teachers learn to collect information about what students know and can do during routine instruction. Teachers may obtain data through, student learning artifacts, observations, or conversations. Participants in this study engaged in the formative assessment process authentically. One teacher invited a student to play with her to understand how he was able to take turns and a second teacher designed a worksheet that students completed during math centers to understand which students understood a newly taught concept. While the first teacher collected observational data and the second teacher used a student learning artifact, both teachers demonstrated collecting information during routine classroom activities to understand what students knew and could do and inform instructional next steps for individuals or small groups of students.

Additionally, Black & William (1998) concluded that short-term formative assessment cycles were effective in boosting student achievement. Participants demonstrated consistent use of short-term formative assessment cycles across academic and developmental domains. Data collection methods such as, collecting student artifacts, taking observational notes or photographs, and using checklists provided evidence of teachers using effective methods during routine classroom activities. Data analysis methods included using rubrics, comparing work to standards, and collaborating with peers. Teachers acted on evidence by forming small groups and developing individual or class learning goals. These actions

occurred fluidly, and many teachers commented during the interview that collecting, analyzing, and acting on data were everyday activities.

Findings suggest that North Carolina kindergarten teachers have a strong understanding of the formative assessment process, demonstrating use of varied methods to collect evidence about what students know and can do during routine classroom activities, analyzing and interpreting the evidence, and using interpretations to determine instructional next steps. Teachers demonstrated use of short-term formative assessment cycles, which Black & William (1998) found to be effective in promoting student achievement. However, findings from this study also indicated that there are mandated assessments that are placing additional demands on teachers without providing useful information for teaching and learning. Teachers indicated that these assessments, which are given to inform instruction, actually shut down teaching and learning, and disrupt routine classroom instruction.

This finding has important practical implications for state officials, county-level decision makers, and North Carolina kindergarten teachers. This finding supports the need for a new assessment that coincides with teaching and learning and provides useful information for instruction. The NC ELI, or full measure *teaching strategies GOLD*[®], is a viable option because it allows for teachers to collect evidence flexibly and in authentic contexts. Tools and strategies developed and used by teachers in everyday contexts can still be used with *GOLD*[®]. However, kindergarten teachers will need adequate training to understand the purpose of *GOLD*[®] and how they can use *GOLD*[®] validly while maintaining the practices that they already use to collect and analyze evidence. It will be crucial that teachers understand that data can be collected during everyday routines so that they do not feel this assessment shuts down teaching and provides stale information for teaching and learning.

Overcoming Barriers and Increasing Implementation Fidelity

If we return to the impetus for NC ELI, the participants' experiences reflected in this study suggest the aspirations outlined in The Race to the Top-Early Learning grant, the Read to Achieve law, and the subsequent adoption of NC ELI to close achievement gaps have not been fully realized. To address implementation challenges revealed through KEA implementation research, NC DPI needs to effectively disseminate a consistent and clear message on the purpose for using NC ELI. They must also clearly define NC ELI as an ongoing formative assessment process to guide teaching and learning. Finally, they must provide training and coaching, demonstrating the ongoing use of all stages in the formative assessment process. One participant captured it best when asked what she thought about having more checkpoints with this measure throughout the year "It would be kind of tough in the beginning because we'd be like one more thing, but I really think in the long run it would help us identify those students and it would give you more information on how to better help them progress with our standards. I mean that's just education today. You know, they just put more on you, but if it was something that

wasn't gonna change after a year or two and it was there and aligned with our standards, I would be all for it."

The findings from this study mirror previous findings related to the ambiguity of ELI's purpose, concerns regarding its' usefulness, and insufficient application of its' data to inform instructional practices (Harvey & Ohle, 2018; Holcomb, et al., 2020; Little et al., 2020). It appears, amidst the competing demands of new initiatives and despite repeated findings from iterative research, little is being done to address the factors that influence implementation fidelity. With good intentions, the NC DPI cautiously attempts to balance the demands asked of teachers, however, a lack of information and consistency surrounding expectations is clearly associated with implementation fidelity.

Diverging from previous literature, this study suggests implementation fidelity is less related to teachers' capacity for formative assessment than it is related to the training capacity of those mandating the process. Teachers in this study did not report concerns over time constraints, or issues with technology (Ackerman, 2018) as evidenced in previous studies. This study detected evidence of how they use formative assessment in their classrooms even when they couldn't clearly define it or state specific examples. For example, when one teacher was asked how she tracks social and emotional development, she stated she really didn't do that. However, during our interview, she apologized because her computer kept buzzing every time her students earned Dojo points. Dojo is an app she is using to reward students for exhibiting positive behavior in the classroom. This app provides data on behavioral goals for individual students, as well as classroom trends, suggesting the teacher is in fact supporting and monitoring her students social and emotional development. This anecdote highlights how teachers need support in managing the various demands placed upon them. Training with NC ELI, or any new initiative, should explicitly describe how implementation fits into existing structures as part of a cohesive system of student support. This involves examining all our assessment resources, data resources, and instructional strategies to streamline the effectiveness of our practices for improved implementation.

Recommendations

Findings from this study led us to make four actionable recommendations, including:

- 1) Communicate the purpose of the NC ELI clearly to all kindergarten teachers. Ensure that kindergarten teachers in North Carolina are fully aware that the NC ELI is an ongoing authentic formative assessment and the types and varieties of evidence that many of them already collect serve as great evidence for the NC ELI as well.
- 2) Expose teachers to the full *GOLD*[®] platform. While it may seem tempting to limit access to the 14 NC ELI items to avoid overwhelming teachers, teachers may actually benefit from having access to all items and all the capabilities of the full platform. Many of the teachers in this study developed

strategies for evaluating evidence that aligned to many of the objectives and progressions presented in the full measure, without the tools provided by *GOLD*[®] to support in evaluating evidence and differentiating instruction. Access to the full platform, including grouping features and lesson plans could help teachers meet the needs of diverse students more efficiently.

- 3) Provide all kindergarten teachers with consistent access to high quality training and coaching with the NC ELI. Teachers should receive preliminary training and adequate ongoing support to ensure they can use the assessment with fidelity to support teaching and learning and mitigate the achievement gap.
- 4) Re-evaluate the assessment load placed on kindergarten teachers across the state. Take into consideration state, county, and district requirements. Determine whether assessments overlap in the information that they seek to collect. Consider reducing the total assessment load but increasing training and support for the required assessments to increase fidelity and decrease the get-it-done mentality.

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