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Findings from the 2015 Statewide
Implementation of the North Carolina K-3
Formative Assessment Process: Kindergarten
Entry Assessment

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Assessment Process: Kindergarten Entry Assessment

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Introduction

During the first 60 instructional days of the 2015-2016 academic year, the Office of Early Learning (OEL) at the North Carolina Department of Public Instruction implemented a new formative assessment process in all kindergarten classrooms in the state. The assessment, known as the NC K-3 Formative Assessment Process: Kindergarten Entry Assessment (KEA), is the initial step in the development of a comprehensive formative assessment process for young children from kindergarten entry through the end of third grade. The assessment process includes five steps for teachers: selecting learning targets, developing criteria for success, eliciting evidence of student learning, interpreting the evidence, and adapting instruction to respond to the student's learning needs. To assist teachers in identifying and selecting learning targets for their students, the assessment includes several construct progressions that outline the developmental pathways of foundational skills within the five domains of early childhood development that are necessary for academic achievement.

The kindergarten entry portion of the NC K-3 Formative Assessment Process (NC K-3 FAP) currently consists of 10 construct progressions:

Table 1.

KEA Construct Progressions

Domain	Construct
Approaches to Learning	Engagement in Self-selected Activities
Emotional and Social Development	Emotional Literacy
Health and Physical Development	Grip and Manipulation
	Hand Dominance
	Crossing Midline
Cognitive Development	Object Counting
Language Development and Communication	Book Orientation
	Print Awareness
	Letter Naming
	Following Directions

Each construct outlines a skill children generally acquire around the age of kindergarten entry and includes a developmentally sequenced list of behaviors describing a child’s progression toward skill mastery. For instance, the object counting skill is defined as the ability of students to “recognize that counting tells the number of objects” (NC Office of Early Learning, 2015). The construct progression begins with the description of a child using counting words randomly while pointing to an object. It then incrementally progresses toward the child being able to keep track of objects by not counting them twice or missing any, recognizing that the last number counted is the total number of objects (cardinality), understanding that rearranging the objects will yield the same number (conservation), and finally being able to continue the counting sequence when an additional object is added without recounting the objects from the beginning. This construct includes a total of 8 developmental steps and descriptions of what behaviors a

child might exhibit in the classroom for each to assist teachers in identify the student's status along the progression.

It is important to note that while the full assessment utilizes a whole-child approach by including constructs within all five domains of early childhood development, initial implementation only required the use of three of these constructs: book orientation, print awareness, and object counting. Several factors influenced the decision to use only those three constructs during the first year. First, the NC legislative mandate governing the KEA specifically requires data be gathered regarding children's literacy and mathematics skills at kindergarten entry. Second, feedback from teachers who participated in the 2014 KEA pilot indicated that utilizing all 10 constructs was overwhelming while they were concurrently learning to use the assessment's new electronic data platform (Ferrara and Lambert, 2015). Furthermore, KEA pilot teachers had an easier time identifying opportunities to elicit evidences of learning regarding literacy and mathematics constructs in the context of normal classroom instruction than for constructs outside of the language development and cognitive development domains (Ferrara and Lambert, 2015). Based on that information, OEL chose to implement only three constructs in the first year, then add the other constructs in phases over subsequent years. The remaining 7 constructs were available during implementation, but school districts and teachers were allowed to choose to utilize those optional constructs based on the individual needs of their students.

Over the 60-day KEA assessment period, teachers elicited and documented evidences of learning in the form of student work samples, photographs, videos, audio recordings, and anecdotal notes from student observations. Teachers uploaded these evidences to an electronic platform developed by Teaching Strategies, LLC[®], which is customized to house the content of the NC K-3 FAP. They then interpreted the evidences and used them to assign a learning status

for each student along the appropriate construct progression. Once a learning status was assigned, teachers used that data to inform instructional decisions to meet their students' unique learning needs.

Study Purpose

During initial statewide implementation of the NC K-3 FAP: KEA, we conducted case studies at six elementary schools selected for their demographic representativeness of the larger North Carolina kindergarten population. The case studies included classroom observations, as well as semi-structured interviews with teachers, administrators, and instructional coaches involved with implementation in each school. At the end of the 60-day KEA period, we also conducted an electronic survey which was open to all NC kindergarten teachers. The purpose of this qualitative study was to gather teacher and administrator feedback that could inform potential changes to the following aspects of KEA implementation:

1. professional development for the assessment process.
2. the content of the current KEA construct progressions.
3. teachers' perceptions of the overall utility of the overall KEA process.
4. the usability and features of the NC K-3 FAP electronic platform.

Methods and Data Sources

Case Studies

The six school case studies consisted of three parts: classroom observations of all kindergarten teachers in the school, semi-structured interviews with a school and/or district administrator involved in KEA implementation, and a semi-structured focus group interview with all kindergarten teachers at the school. Classroom observations provided the opportunity to see the assessment in use, as well as provided a context to understand feedback from the focus

groups and interviews that may have been unique to their particular school or classroom. We conducted the administrator interviews with the school principal and/or a district administrator involved with KEA implementation in the district. All kindergarten teachers in the school took part in the focus group interviews and their instructional coach was invited to participate as well if the school or district utilized one. In total, the six case studies included 19 teachers, 5 principals, 2 district administrators, and 2 instructional coaches.

Classroom observation lengths varied due to individual school schedules, but all teachers were observed for a minimum of 1 hour in the morning between 8am and 11am. Observers noted classroom characteristics, such as total number of students present, whether a teaching assistant or co-teacher was present and their contributions to the classroom, whether the classroom was inclusive of exceptional children, instructional resources and technology available in the classroom, and instructional strategies utilized during the observation period, etc. After noting classroom characteristics, observers recorded qualitative field notes capturing the teacher's instructional routine, the students' activities, and any use of the KEA process. All observation notes were transcribed to document format for analysis.

All teacher, school administrator, and district administrator interviews were semi-structured. The interviewers used prepared interview protocols consisting of open-ended questions; however, they did at times ask follow-up questions when warranted. All interviews were audio recorded, and then transcribed into text for analysis.

Electronic Survey

At the end of the 60-day 2015 KEA implementation window, we conducted an electronic survey which was open to all North Carolina kindergarten teachers. The survey provided an avenue for teachers to give feedback regarding the professional development they received to

support their implementation of the KEA process, their overall understanding of the purpose and usefulness of the KEA process, the clarity and understandability of the KEA content, and the usability and features of the assessment's electronic platform. Furthermore, it allowed us to determine whether differences existed in these implementation areas between districts and to better understand why those differences may exist.

The survey instrument included a total of 22 closed-ended or Likert scale questions and 25 open-ended or free response questions. Some questions were situational and therefore not required to answer by all teachers. For instance, if a teacher responded that they did not participate in the 2014 KEA pilot, the survey system automatically skipped the next three questions which asked teachers to compare their pilot experiences with the finalized KEA process implemented in 2015. A majority of the questions were identical to those used in the semi-structured teacher focus group interviews, while others were duplicated from the survey issued following the 2014 KEA process pilot to allow for pilot vs. implementation analyses.

We received 736 survey responses, which calculates to a response rate of roughly 14.2%. The relatively low response rate is likely due to the timing of the survey which coincided with the end of the second marking period and several benchmarking milestones for other district and state assessments. We received responses from 102 of the 115 North Carolina public school districts. The number of responses per district varied widely and ranged from 1 to 85. The districts with the most responses were Wake County (85) and Charlotte-Mecklenburg (83), which are also the two largest school districts in North Carolina based on student enrollment. The number of responses per district represented in the survey appears relatively proportionate to the size of the district, therefore the possibility of bias due to over or under representation within the survey sample appears minimal.

Data Analysis

All observation field notes, interview transcriptions, and survey responses were uploaded to the qualitative data analysis program NVivo 11. At the beginning of the analysis, we imported the codebook generated during our previous research on the 2014 KEA pilot (Ferrara and Lambert, 2015). We then used a grounded approach to analyze the data. In other words, though we partially reused a previously generated codebook, we did not enter into the analysis with particular hypotheses and allowed the data to dictate which codes were used or discarded. Of the 193 codes in the imported codebook, only 104 remained relevant. An additional 48 codes were generated during this round of analysis, for a total of 152 unique codes used. Some codes were categorical (who, what, where, etc.), while others were indicators of specific topics or ideas (elements of professional development, specific aspects of the KEA content, etc.). There were 35,671 references in total to those unique codes across all data sources. We conducted frequency and cross-reference/matrix coding analyses to identify the most common feedback themes and identify where codes often intersected.

Findings and Implications

Professional Development

The Office of Early Learning created 4 regional implementation teams (RITs) to support planning and implementation of the new NC K-3 FAP initiative across the state. Each RIT consisted of representatives appointed by their school district and was guided by two regional consultants from OEL. The number and type of representatives sent to participate varied by district, but representatives were most often kindergarten teachers, instructional coaches, school principals, and/or various district administrators (i.e. Director of Grades K-2, K-8 Literacy Specialist, etc.). Four monthly RIT meetings were held between January and April 2015. The

purpose of these meetings was to: 1) provide an avenue for OEL to convey accurate and consistent information regarding the KEA to all districts in a timely manner, 2) assist districts in creating their own implementation plans based on their unique capacities and needs, and 3) provide districts the opportunity to collaborate with one another during this planning process to share helpful ideas and troubleshoot issues encountered within their districts between meetings.

While OEL provided to all districts the same set of resources and materials to assist with professional development and overall implementation, such as a KEA construct progression manual, an instructional webinar demonstrating the use of the electronic platform, and video examples of teachers using the formative assessment process in their classrooms, districts outlined their own professional development procedures as part of their implementation plans. As such, professional development methods varied widely across districts, as did the effectiveness of that training. This differs from the professional development process used during the 2014 KEA pilot which utilized a standardized 2-day training workshop for all pilot participants. The following table illustrates how this different approach affected teachers' overall perceptions of the professional development they received prior to implementation as compared to preparation for the assessment pilot:

Table 2.

Professional Development Questions

Please choose the best fit for each of the following statements. After training I...	2015 Implementation			2014 Pilot
	% D & SD	% N	% A & SA	% A & SA
understood the purpose of the KEA.	35.2	21.3	43.5	60.3
understood the formative nature of this assessment.	24.6	22.7	52.7	66.2
understood the content of the construct progressions.	27.9	20.4	51.8	47.1
could identify current instruction or assessment practices that can act as evidence for the construct progressions.	26.2	20.1	53.7	57.4
felt confident in my ability to upload evidences to the electronic platform.	45.9	20.4	33.7	30.9
understood how to pull reports from the electronic platform to assist with instructional planning.	63.1	18.8	18.5	27.9
felt prepared to use KEA data to inform instructional decisions for my students.	49.0	23.8	27.3	38.3

Notes. SA= Strongly agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly disagree

Pilot sample size = 76, Implementation sample size = 736

There were notable decreases in agreement to these statements regarding the training teachers received in all but two areas, which increased by less than 4% each.

To better understand the increase in overall negative perceptions of the professional development teachers received, we analyzed the coded responses to the following survey and interview prompts:

1. Describe in detail the professional development/training you received prior to KEA implementation at the beginning of the school year. Please include details, such as delivery method, duration, materials, etc.
2. Who provided this initial training (i.e. district directed, internal school training by instructional coach, lead teacher, or peer, etc.)?
3. Please describe any additional training or continued support you received after you began implementing the KEA in your classroom.
4. Who provided this additional training or continued support?

The first finding of note came in response to the first prompt: 95 of the 736 teachers who responded to the survey (12.9% of respondents) indicated that they received no training prior to implementation. These teachers were not confined to a single district, but hailed from more than 20 districts across the state. Each teacher simply received an email from a school or district administrator which stated that the KEA was a new mandate for the year and directed them to either review attached materials (the OEL developed construct manual) and/or to follow links to online resources (videos and webinars explaining the electronic platform). These teachers were provided no explanation as to the purpose of the assessment or its utility in informing instruction for their students; therefore, they did not have a proper understanding of how the KEA process fit into the overall instructional landscape of their district, school, and classroom. Not surprisingly, then, these teachers saw little value in the KEA process and instead felt they were handed, as one teacher describes, “one more thing that added to our already overflowing plate of

required assessment and instructional tasks.” Of those 95 teachers, 55 received some form of training after the first few weeks of school. The other 40 teachers never received any instruction regarding the assessment and either struggled through the process by working with their fellow kindergarten teachers or by simply “reading the manual and playing with the program until I learned the ropes.”

For the teachers interviewed and surveyed who did receive professional development prior to implementation, the delivery method, amount/length, and resources provided were highly diverse between districts. Some districts only provided online webinar modules for their teachers (25 references), others provided formal district-wide courses (385 references) and/or school level training within grade level planning or professional learning community (PLC) meetings (103 references). The duration of training ranged from a single 30-90 minute long meeting (87 references), to half-day (31 references), full-day (42 references), and multi-day (71 references) workshops. Training was also conducted by different individuals or groups within each district. The two most common professional development directors were district administrators/central office representatives (401 references) and district or school level instructional coaches/facilitators (228 references). Other training directors included: a lead teacher or grade level chair (84 references), kindergarten teachers who previously participated in the 2014 KEA pilot (60 references), OEL regional consultants (53 references), and school administrators (26 references).

In addition to differences in professional development between districts, there was also a high degree of variability in the training received by teachers within some districts. These districts were generally those with large student populations and a greater number of schools. These large districts tended to use a “train-the-trainer” model, where an individual or small team

from each school attended a central district led training and was then tasked with disseminating that information to their peers. Based on responses from teachers instructed in this manner, it appears that each trainer either took a different approach to professional development at their home school or had differing levels in understanding the content themselves (76 references). To use one large district as an example:

- 13 teachers indicated they were lead teachers that attended a half-day training hosted by the district and were then tasked with training their peers,
- 18 teachers stated they received training during a PLC meeting from their instructional coach or a lead teacher,
- 12 teachers indicated they had a “brief discussion” that provided an overview of the assessment during a meeting at the end of the last school year,
- 8 teachers received an online video/webinar tutorial which they were instructed to watch on their own time, and
- 25 teachers stated they received no training at all.

There were four districts where teachers agreed that the professional development they received was effective in preparing them to implement the KEA process. We identified these districts based on the following criteria: 1) we must have received feedback on all 7 questions detailed in Table 2 from no fewer than five teachers in a district to minimize sampling bias, and 2) the percentage of teachers agreeing or strongly agreeing to each question needed to exceed 65%. This percentage was chosen solely for the purpose of narrowing down the districts for analysis. We found that the true percentage of agreement within each of the four districts this method identified actually exceeded 92% respectively for all seven professional development questions. We analyzed the professional development methods used by each of these districts to

pinpoint both the common and unique characteristics which may have influenced teacher perspectives of their training in these districts. First, while their length varied from two hours to a half-day, all four included multiple district level workshops that each introduced different KEA elements. Second, these workshops were all conducted by a district implementation team that consisted of a district administrator and at least one teacher who either participated in the 2014 KEA pilot or was trained as part of their RIT. In three of the districts, teachers were given the opportunity to visit demonstration classrooms where teachers who participated in the pilot modeled the use of the process so that teachers understood what to expect. Finally, teachers in two districts noted their district's support in attending the 2015 North Carolina Association of Educators convention during which a panel presented an overview of the KEA process and provided a space to ask questions.

KEA Construct Content and Overall Utility of the KEA Process in Practice

Regarding the content of the book orientation and print awareness construct progressions, 80.3% of survey respondents felt the range of behaviors described in the progressions accurately represented the range of skills exhibited by kindergarteners in their classroom. The most frequent feedback from the 19.7% of teachers who disagreed stated their students were either “beyond” the range at the beginning of the year (102 references) or their students followed the extended common core in self-contained exceptional children classroom and, therefore, did not “have the pre-skills to accomplish this assessment” (10 references). Additionally, 88.8% of survey respondents felt these constructs were logically sequenced and followed the proper developmental pathway toward skill mastery. The most frequent feedback from the 11.2% of teachers who disagreed stated that the behavioral descriptors were too broad or vague and that skills seemed to overlap, which made it difficult to assign a learning status accurately on the

progression (55 references). Another critique regarding sequencing was that the progressions did not align with the scales of other assessments, such as MClass, Reading 3D, DIBELS, and TRC or with the Common Core standards (31 references).

Only 58.5% of survey respondents felt they could make meaningful instructional decisions based on the data they generated regarding these two constructs while implementing the KEA process in their classrooms. The most common feedback from the 41.5% of teachers who disagreed indicated that other state or district assessments, such as MClass, Reading 3D, DIBELS, and TRC, were more accurate or meaningful for driving instruction in their classrooms (319 references for book orientation and 323 references for print awareness). The current accountability climate added to teachers' perceptions that these other assessments held more weight. Five teachers directly stated that they used only data from MClass and Reading 3D to inform their instruction, because those assessments "are used in our teacher standard 6 evaluation" and they must "attend to that measure to have a continued career in NC education." An additional 12 teachers stated that their school administrators in no uncertain terms said "we use MClass data for instructional planning in this school," and we will only discuss how to "incorporate the KEA assessment into lesson plans so that it does not disrupt teaching or learning and negatively affect our school's test scores."

Teacher perceptions of the content of the object counting construct progression were more positive than the other two constructs. According to the survey, 87.1% of respondents felt the behaviors described in the progressions accurately represented the range of skills exhibited by students in their classroom. The most common feedback from the 12.9% of teachers that disagreed was that the majority of their students were "beyond" the described range before or soon after entering kindergarten (16 references). Additionally, 91.4% of surveyed teachers felt

the construct was sequenced appropriately. The most frequent feedback from the 8.6% who disagreed was that the descriptors in the progression were too broad, vague, or abstract, making it difficult to assign a learning status for their students (24 references).

More teachers felt they could use data generated by the object counting construct to make meaningful instructional decisions as well (66.4% of surveyed teachers). Of the 33.6% of teachers who disagreed, the most common reason provided was that data from other assessments, such as the NC K-2 Math Assessment, AIMSweb, and AMC Math/Kathy Richardson Math, was more accurate or meaningful for their instructional planning (90 references). Five of the teachers interviewed theorized that the reason the object counting construct was seen more favorably by teachers is that they “have fewer instructional resources and assessment demands in mathematics currently than in areas of literacy...right now we are on literacy overload and the KEA ended up as just another demand in that area.”

In regard to overall KEA process utility, the inclusion of only the book orientation, print awareness, and object counting construct progressions at initial implementation had unintended consequences on teachers' perceptions. Teachers overwhelmingly viewed the content of the assessment as redundant and a duplication of data gathered through other state or district mandated assessment (357 references). Further contributing to the teacher perceptions of duplication were issues stemming from the inadequate training many teachers reported they received. For instance, teachers were instructed to use data from these other assessments as evidence for the construct progressions. Many teachers understood this to mean that these assessments were the only sources of evidence they should use rather than adding observations and student work samples from other classroom activities. Furthermore, only 264 of the 736 teachers surveyed (35.9%) stated they received hands on training on the electronic platform

before or during the 60-day implementation window. This indicates that most teachers did not receive adequate instruction on how to use the reporting functions in the electronic platform, so they did not have the skills necessary to utilize the data they were entering to inform their instruction. These issues converged in such a way that many teachers interpreted the KEA to be no more than a database to “house multiple sources of assessment data for the state’s use,” rather than a formative assessment process with an electronic platform that could assist them in individualizing instruction for their students based on their unique needs.

Of the teachers interviewed and surveyed, 48 chose to use one or more of the optional constructs provided during implementation. The table below illustrates a breakdown of the number of teachers who utilized each construct progression and what percentage of teachers who used the construct felt they could make meaningful instructional decisions from the data generated it:

Table 3.

Usage and Utility of Option KEA Construct Progressions

Construct	# of teachers who used the construct	% of teacher who found it meaning for their instruction
Engagement in self-selected activities	14	78.6
Emotional literacy	10	70.0
Grip and manipulation	19	84.2
Crossing midline	11	81.8
Letter naming	28	71.4
Following directions	17	76.5

While 48 teachers is a relatively small subgroup from the total sample of teachers interviewed and surveyed, these numbers do indicate that teachers found greater utility in data from the optional constructs than from the three required at initial implementation. Furthermore, 76.4% of teachers who utilized the social, emotional, and physical development constructs stated they saw value in the whole-child approach to the assessment and hoped that the state's added focus on developmentally appropriate instruction would "continue and move up vertically to first and second grade." In fact, five of these teachers stated that since the KEA process was state mandated, they used its content and approach to "educate" their administrators, who were not knowledgeable regarding best-practices in early childhood education, regarding the importance of play-based learning and successfully advocated for the reintroduction of developmental centers in their schools.

Usability and Features of the Electronic Platform

One of the largest areas of practitioner feedback we received during our study concerned teacher use of the KEA electronic platform in some way, whether that was overall user friendliness of the program, time necessary to upload evidences to the platform, integration of the platform into district professional development, integration of the platform into existing district/school electronic infrastructures, etc. There were a total of 1,305 references concerning the platform, indicating that this topic was at the forefront of practitioner thoughts during implementation. Most feedback regarded the user friendliness of the online platform website and iOS app, which is outlined in the following table:

Table 4.

Teacher perceptions of platform usability

Please choose the best fit for the following statements. How user friendly is...	% D & VD	% N	% E & VE
the KEA website?	53.3	10.3	36.4
the KEA iPhone/iPad app?	24.6	55.0	20.4

Note: VD = Very Difficult, D = Difficult, N = Neutral, E = Easy, VE = Very Easy

More than half (53.3%) of teachers interviewed and surveyed indicated that the KEA website was not user friendly. The most common feedback in explanation of this perception was the sheer amount of time it took to upload evidences to the website and assign student learning statuses (65 references). Teachers commented that there were “too many clicks” and they had to continually go “back and forth between multiple tabs or pages in order to complete the uploading and finalization process.” Furthermore, teachers had difficulty accessing the website from their school computers due to compatibility issues with school internet security software or protocols and/or the website’s integration with NC Powerschool (66 references). A total of 20 teachers from multiple districts indicated that they did not gain access to the system until the final week of the 60-day implementation window, so the task of entering all of their evidence was both overwhelming and useless to driving their instruction since the data was not current.

Proportionately, more teachers found the KEA app to be user friendly compared to those who found it difficult to use than for those who utilized solely the KEA website. The larger percentage of neutral responses is largely due to the high number of teachers who did not have access to an iOS tablet to use regularly in their classrooms (52.5% of teachers interviewed and

surveyed). The most common feedback regarding the iOS app was that teacher found it to be more relatively easy to use once they “played around with it,” but they did not receive enough training on how to use it; so, it was frustrating to figure out how to review previously uploaded evidence and determine how the app integrated with the website (33 references).

Conclusion

While this report has outlined some significant issues regarding the professional development provided to support implementation and the usability of the assessment’s electronic platform during the 2015 statewide implementation of the new NC K-3 Formative Assessment Process: Kindergarten Entry Assessment, it is important to note that a number of teachers did implement the assessment with fidelity in their classrooms. We documented examples of numerous teachers performing the full five steps of the formative assessment process during our observations, interviews, and survey (203 for book orientation, 214 for print awareness, and 92 for object counting).

Since the inception of the NC K-3 FAP, the NC Department of Public Instruction and the Office of Early Learning intended for it to evolve through “iterative improvement cycles that increase the usability and effectiveness of the formative assessment process” (NC K-3 Assessment Think Tank, 2013). If the opinions of previous 2014 KEA pilot teachers are any indication, this iterative development process is working. While pilot teachers preferred having access to the broader range of constructs rather than the three that were mandated during implementation (22 references), pilot teachers felt the revisions to the construct manual made it a more useful resource during implementation (17 references) and felt the overall process was much easier due to changes made to the KEA website and iOS app (44 references). The majority of previous pilot teachers (82.6%) also stated that they felt their voice was heard during the pilot

because they could recognize the changes made to the implemented KEA process based on their feedback. Together this indicates that practitioner informed changes are occurring as part of the continual development of the NC K-3 FAP: KEA. Whether that knowledge affects overall teacher perceptions and buy-in for the assessment process is a question for future research.

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