Public Schools of North Carolina
State Board of Education
Department of Public Instruction

Report to the North Carolina General Assembly

Evaluation of the Math and Reading Diagnostic Pilots

2009-2010 Section 7.18.(b)

Date Due: December 01, 2010
Report # ----

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Report to the Joint Legislative Education Oversight Committee on the Evaluation of the Math and Reading Diagnostic Pilots

Budget Act of 2009-2010 Section 7.18.(b)

Notwithstanding G.S. 115C-174.11, the State Board of Education shall investigate and pilot a developmentally appropriate diagnostic assessment for students in elementary grades during the 2009-2010 school year. This assessment will (i) enable teachers to determine student learning needs and individualize instruction and (ii) ensure that students are adequately prepared for the next level of coursework as set out by the standard course of study.

The State Board of Education shall report the results of the pilot to the Joint Legislative Education Oversight Committee, the Fiscal Research Division, and the Office of State Budget and Management, by December 1, 2010.

Description of Pilots:

During the 2009-2010 school year, the Department of Public Instruction piloted reading and math diagnostic assessment systems across all regions in North Carolina. There were 27 schools involved in the reading pilots and 13 schools in the math pilots. The reading assessment that was piloted was mClass Reading 3D from Wireless Generation and the math assessments used were Assessing Math Concepts with Math Perspectives. The teachers in the pilots used handheld mobile devices to assess the students. The pilot schools' staff was trained in the late fall of 2009 and teachers began benchmarking students with the Middle of Year (MOY) assessments in January 2010. Teachers formatively assessed students throughout the spring of 2010 and used the assessment results to guide their instruction in the classroom. End of Year (EOY) assessments were given in early May of 2010. The University of North Carolina at Chapel Hill conducted an evaluation in the reading pilot schools and a doctoral candidate from UNC Chapel Hill evaluated the math pilot schools. The evaluation reports for the reading and math pilots follow.

Key Questions:

Each evaluation was conducted using similar key questions.

1. Will the use of technology increase the fidelity of the assessments?
2. Will teachers use the information and data to guide their daily instruction?
3. How widely and regularly is the assessment administered?
4. Were teachers highly qualified to administer the assessment?
5. How did the teachers feel about using the technology for assessment purposes and using the assessment results?
6. Is formative assessment/progress monitoring being used and how?

7. How do teachers use the data generated from the assessments?
8. What support do teachers need in order to implement an assessment system using mobile devices?

Summary of Findings:

Data was collected through surveys, focus group sessions, consultant visits, and reports generated through the vendors' management systems.

1. Will the use of technology increase the fidelity of the assessments?

Each study reviewed the number of students assessed during the assessment windows. In math, over 95% of eligible students were assessed in each assessment window. In reading the number of teachers conducting assessments for more than 25 students during the End of Year period indicated expanded use of assessments in the general classrooms.

2. Will teachers use the information and data to guide their daily instruction?

In math, the teachers stated that the most common use of the data was to gather information on struggling students. Teachers also reported using the information to determine work for math work stations/centers, for grouping students in small groups and for one-on-one instruction. Reading pilot teachers also referred to using data for one-on-one instruction, grouping, grading, and progress reports. These teachers also felt that the assessments enabled them to provide more comprehensive lesson plans and helped them in targeting long and short term goals for instruction. Teachers believed that the immediate results from the electronic system also helped them with differentiation in the classroom and allowed them to be very specific in their instruction. This focus on the assessments made teachers more aware of the fact that formative assessment is needed to guide instruction and improve student achievement.

3. How widely and regularly is the assessment administered?

In both pilots, the teachers were all fairly consistent in the administration of the benchmark assessments. Some reading teachers indicated that the results of benchmark data were used to set school-wide goals for consistency. The formative assessments or progress monitoring occurred more often and was administered between benchmark periods to help guide instruction for the classroom. The progress monitoring occurred more often for students who were struggling with concepts.

4. Were teachers highly qualified to administer the assessment?

The teachers felt that the training they received prepared them for conducting the assessments in their classrooms. They also felt that it was important for them to know their students well enough to use the

assessments and instructional strategies for interventions together to meet the needs of all students. The reading teachers were trained through a Train-the-trainer model using two teachers from each school, but each math teacher in the pilot participated in the training sessions for math.

5. **How did the teachers feel about using the technology for assessment purposes and using the assessment results?**

In both the math and reading pilot schools, the teachers felt more comfortable as the year progressed using the technology for the assessments. The teachers were able to use the results to share with students and parents and guide daily instruction. The math teachers specifically referred to the quick turnaround of reports, the ease and speed of conducting assessments using technology, the lack of subjectivity, and receiving instant information to make curricular decisions and keep up with student progress. Several comments were made about the time it takes to conduct the assessments without the assistance of another adult in the room and that sometimes the assessments revealed too many areas of concern and there was limited time for remediation.

6. **Is formative assessment/progress monitoring being used and how?**

The math teachers in the pilot reported more time being spent in work/center stations and small group work with focused lessons on concepts and skills. The data from the reading pilot schools indicated that the teachers were conducting more formative assessments as the year progressed and teachers became more accustomed to the devices and the program. The results of the reading also shows that more students were in need of assistance toward the end of the year which would indicate that the technology was helping teachers identify students in need of intervention and concept development.

7. **How do teachers use the data generated from the assessments?**

The teachers reported that they used the data to develop small groups for concept and skill reinforcement, to differentiate instruction, and to build on skills to move students forward. Students who were struggling were formatively assessed more often to determine interventions needed for individualized instruction.

8. **What support do teachers need in order to implement an assessment system using mobile devices?**

In the math pilot technology was the biggest area of need. Some schools had out-dated equipment, synching issues, and firewall issues in the districts. There were also some teachers who lacked technology knowledge to set up and troubleshoot with the devices. It was suggested that each school have a technology contact or designee who would have extra training on the system to make things run smoothly. Another main concern was that math instructional practices in general need to move toward and parallel reading practices with small group instruction and hands-on engaging activities in the

classroom. There were suggestions of continuing with the support from DPI consultants visiting the classrooms, one-on-one teacher training for each teacher involved, getting teachers help during the benchmark assessment windows so that classroom instructional time continues, and having support from school leadership that values engaging and active instructional practices.

In the reading pilot technology issues were also a concern. There were problems with synching, firewalls and servers. These teachers also expressed a need for a technical expert on site that could troubleshoot when issues arise. There were some comments about the Text Reading Comprehension component of the assessment and the time involved with assessing each child. In general, the teachers felt that they received good support from the DPI team and the vendor.

Final Evaluation Report

Diagnostic Math Assessment Pilot Program

Kindergarten and First Grade

prepared by Renee Cunningham

October 2010

Introduction

The Mathematics Assessment Pilot was developed as a Governor's initiative with designated funds from the Assessment and Accountability Division of the Department of Public Instruction in the 2009 state budget. After an exhaustive search of available assessments that utilize Personal Digital Assistants (PDAs) two products were available, one from Didax, which uses the assessments developed by Kathy Richardson, and a Wireless Generation product based on the work of Dr. Herbert Ginsburg. Comparing the assessments to the Essential Standards, which had just been adopted in September of 2009 when this project was getting started, the Kathy Richardson/Didax assessments matched many of the standards, where the Wireless Generation assessments matched very few. As a result, the Kathy Richardson/Didax assessments were chosen as the math product to pilot.

A letter was sent to all Local Education Agencies (LEAs) by the State Superintendent, Dr. June Atkinson, to identify interest in the project. Schools were then chosen based on their location in the state (at least one from each of the eight regions), size (half the schools were "large" (three or more teachers at a grade level, K or 1st) and half were "small"(one or two teachers per grade level, K or 1st), previous work with PDAs (some without experience, and some with experience, usually in giving reading assessments on the PDA), a range of student populations to match the state populations (with regard to ESL, poverty, rural, urban, suburban, etc.) and a variety of performance indicators from the ABC's Report Card. Additionally, all schools that expressed an interest from Halifax County, including Weldon City Schools along with two in the Halifax County Schools were included. Two schools in Avery County were included because both of them are very small. Three schools from region one, the farthest northeastern part of North Carolina were chosen to support that region. Thirteen schools were finally chosen to be a part of the pilot project. (See Table 1).

Table 1. List of schools that were chosen to be a part of the Mathematics Assessment Pilot Project (MAPP)

Region	County/ LEA	School Name	Number of K & 1 Teachers	Number of K & 1 Students
1	Martin County Schools	Williamston Primary	15	276

1	Dare County Schools	Manteo Elementary	11	212
1	Bertie County Schools	Aulander Elementary	3	52
2	New Hanover County	Bellamy Elementary	10	207
3	Halifax County Schools	Aurelian Springs Elementary	5	113
		Scotland Neck Elementary	4	80
3	Weldon City Schools	Weldon Elementary	7	148
4	Cumberland County Schools	Cliffdale Elementary	12	219
5	Guilford County Schools	Sternberger Elementary	5	104
6	Charlotte-Mecklenberg Schools	Smithfield Elementary	10	185
7	Avery County Schools	Crossnore Elementary	4	80
		Riverside Elementary	2	40
8	Haywood County Schools	Hazelwood Elementary	8	161
Totals			96	1,877

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The purpose of the project was to determine if the use of a PDA increased fidelity of the assessment. Additionally, would the teacher use the assessment data if it were readily accessible, and how would the data be used? And finally, what type of support is needed to put an assessment program in place on a large scale? Data were gathered though the reports available online through Didax, teacher interviews and focus groups, log of emails and phone calls to the consultants at DPI and a final survey was conducted at the end of the year. This initial report will address these three questions, and further analysis will be conducted and submitted at a later date.

The project began with a meeting for all administrators of participating schools on November 11, 2009. The training for teachers began shortly thereafter with all teachers coming to Raleigh, NC, for training in the assessments themselves, as well as curriculum matched to the needs students would demonstrate through the assessments. These training sessions were coordinated by the Department of Public Instruction, and consultants from Math Perspectives, Kathy Richardson's professional development company, did all of the training. There were two groups at each grade level, one group

used the PDA from the first assessment throughout. The other group would use the paper & pencil assessment for the first assessment window, then come back for additional training to use the PDA for the last two assessment windows. All four groups received training before the December 7- 18 window for the first round of assessments (Beginning of Project- BOP). Then the two groups, Kindergarten teachers and First grade teachers that had used the pencil & paper assessments, came back for two more days of training in January 2010. For the February and April assessment windows, all teachers used the PDAs. A Math Consultant for the DPI visited all of the large schools during each assessment window, and a Primary Consultant with DPI whose specialty is primary mathematics, visited the small schools during each assessment window. These consultants served as contacts for teachers and administrators for questions regarding the assessments themselves, and the IT people at Didax were on-call to resolve technical issues.

The training consisted of background information about the math concepts addressed in the assessments, how to use the PDA (or Pencil & Paper version), how to use the reports, and what curriculum activities to use based on the data from the assessments. The teachers who used the PDA in all assessment windows received three days of training. The teachers who used the paper & pencil version first, received two days of training before the first window, and two more days of training before the second window.

Three assessments were chosen in consultation with Kathy Richardson to assess “essential understandings” students need in mathematics at each grade, Kindergarten and first. Kindergarten teachers used the Counting Objects as the keystone assessment. Students had to be assessed on this test until they became proficient. So, if a child was rated as proficient during the first assessment window, then that child did not need to do Counting Objects again. If a child did not become proficient in Counting Objects, then she could be assessed again in the second assessment window, and again in the third if she did not show proficiency in the second window. Teachers also used Number Arrangements, and Changing Numbers with Kindergarten students. First grade teachers used the Hiding Assessment for the keystone assessment, and Number Arrangements and Groups of Tens as additional assessment for key first grade concepts. The data collected for this research focused on the keystone assessments for each grade level.

Data Collection

The collection of data consisted of reports available to DPI consultants from the Didax website, final interviews conducted by DPI consultants during or after the End of Project (EoP) Assessment Window (in April or May 2010), and an online survey that teachers participated in after the end of the school year 2010. Additionally copies of emails that were sent to DPI consultants were kept and logged.

There were 96 teachers participating in this pilot study from all thirteen schools. After all data were collected, there were 70 teachers, 73% of the 96 had reliable data for all three assessment windows, and it is from these teachers that data is used for this initial report. Reasons teachers were dropped ranged from being on maternity leave and missing an assessment window, to retiring mid-year, to significant discrepancies between the Didax report and the teacher's verbal report, most commonly based on technical glitches in synching the PDAs. There is data from the End of Project interviews for all of these 70 teachers. The online survey did not require teachers to add their names, although about three fourths of the seventy-five respondents did. A sampling of the almost 2,000 emails will be discussed in the section on teacher support needs.

Outcome Evaluation Findings

This Pilot project was designed to evaluate several issues with regard to the impact of technology on primary grade assessments. The key issues are:

- Does the use of the technology increase the fidelity of giving assessments?
    - Do teachers assess all students eligible for assessments?
    - Does the number of students assessed throughout the project remain constant?
- Do teachers' use the resulting data as formative assessment to impact daily instruction?
    - What reports to teachers access and report using?
    - How do teachers use the data with regard to instructional practices?
- What kinds of supports do teachers need to implement this use of technology?

- How do teachers feel about the use of technology for assessment practices?
- What supports do teachers need to address student mathematics needs based on results of assessments?

There are several aspects of fidelity that are being addressed by this research. The first addresses whether the teacher actually performs the assessment to a more "true" or standardized level than when she does the assessment without the use of the PDA. This question is a complex issue, and will be addressed in a future report. The second question is if teachers actually do the assessments with students to then be able to use the resulting data. This can be looked at in two ways, first, how many students were assessed compared to how many students were "eligible" to be assessed, and secondly, comparing the numbers of students assessed over the three assessment windows (BoP, MoP and EoP).

Regarding the use of the data also has several components. First, do the teachers access the reports, and do they find them easy to use? Secondly, once they have the report, how do they use the information in the classroom? Both of these questions will be addressed here.

Finally, the supports needed for teachers if a wider implementation roll-out is planned. These are questions about teachers' abilities to use the technology, and to be able to figure out what to do when something goes wrong. Then there's the supports needed to make a shift in the way teachers think about mathematics instruction for our youngest learners.

1. Does the use of technology increase the fidelity of assessments by increasing the likelihood of teachers assessing all eligible students?

The mathematics pilot was able to use the 1st Assessment Window in December to test this question because of the availability of an identical Pencil & Paper version of the PDA assessment. During the Beginning of Project (BoP) assessment window, December 7th-18th, 2009, half of the teachers from the large schools used the Pencil & Paper version of the assessment. The form of the assessment was identical to the one on the PDA, with a few non-significant exceptions for formatting to the PDA software. Out of the 70 teachers with complete data for this report, 23, exactly one-third, used the Pencil & Paper versions. Twenty-two out of the 23 teachers assessed 100% of their

eligible students during the December 7th to January 14th BoP window (the window was always extended two weeks after the date given to teachers to allow for absent students, weather, or other extenuating circumstances that delay assessments in classrooms). The one teacher that did not assess all students assessed all but one (17 out of 18 students).

Many of the teachers using the PDA also assessed 100% of their students (33 out of 47 teachers). Five teachers of the remaining 14 missed one student, six teachers missed between 2 to 4 students, and three teachers did not assess more than 5 students. The most common reason for not assessing students was that the child was absent on the day that the teacher assessed. The reason given for missing more than five students was that it was a difficult time of year to get this done (the two weeks directly prior to winter break). Proportionally, the teachers who used the pencil & paper version missed assessing fewer students than the teachers who used the PDA. Overall, only 15 out the 70 teachers or 21% did not assess 100% of their eligible students and only 13% (9 teachers) missed assessing more than one student.

There may be some factors associated with being in the pilot project that gave such high results. For the most part, the teachers and administrators felt that it was an honor to be chosen to participate in this pilot project. Teachers were impressed about the significance of this project with the full backing of the Department of Public Instruction, Math Perspectives and Didax. Kathy Richardson, the author of the assessments, and renowned primary mathematics researcher came to speak to the Administrators and actually did the first Kindergarten training session herself. The president of Didax, Brian Scarlett, also came to these sessions, and was ready right on the phone whenever teachers needed technical assistance. Dr. June Atkinson, State Superintendent of Schools came to see teachers during their training, along with several notable legislators and representatives of the Governor's Office. This extra attention did not go unnoticed by the teachers, administrators. or central office personnel in the LEAs. Furthermore, our sample of schools was selected from schools that expressed an interest in the project. Most often, however, the teachers were not involved in expressing the interest. Many did not even find out what the project was until they arrived at the training. Even so, The vast majority of these teachers were extremely conscientious and were excited to head in a new direction with math assessments.

Looking at the data over the three Assessment Windows (BoP, to MoP, to EoP) a generally positive trend with an increasing amount of students being assessed can be

seen by the teachers who did not assess all students in the first assessment window (BoP). Of the 15 teachers who assessed less than 100% in the BoP, 11 of them assessed more students during the MoP and EoP windows. The other 4 teachers tested fewer students in the MoP window, but went back up to a higher percentage of students tested in the EoP window.

Looking at the fifty five teachers who started off in the BoP assessing all of their eligible students, 36 (65%) continued to assess all of their students throughout the project. Seventeen teachers assessed less than 100% of the eligible students during one of the assessment windows, but assessed all students in the other window. Ten of these teachers only missed one student in the assessment window where their percentage of students assessed dropped. For example, teacher A assessed all of her students in the first assessment window. In the second assessment window, she assessed all but one of her students, and in the third assessment window she assessed all of them again. Or, teacher B, assessed all of her students in the first assessment window, and the second window, but missed one student in the third assessment window. Only one teacher missed 2 students in the window that was less than 100%, and two teachers missed three students. Four teachers missed 7 or more students in the one assessment window that was less than 100% tested. The assessment window where the drop was most frequent was the MoP window, in February 2010. In 2010 several LEAs experienced significant days out of school for weather related reasons. It was difficult for teachers in these districts to assess all students before the extended deadline of March 5th. Several teachers did get the rest of the students tested after the extended deadline.

Overall, over 95% of eligible students were assessed in each assessment window, which means over 1200 students were assessed three times during the 2009-2010 school year.

Table 2. Number of student assessed at each assessment window along with the percent of total students eligible for testing.

		1st AW			2nd AW			3rd AW		
		# Kids Tested	# Kids eligible	% tested	# Kids Tested	# Kids eligible	% tested	# Kids Tested	# Kids eligible	!% tested
	Cliffdale- Cumberland Co.									
	Kindergarten									
1	Teacher AA (PDA)	10	10	100.00	17	17	100	15	15	100
2	Teacher AB (PDA)	14	20	70.00	19	19	100	17	17	100

3	Teacher AC (P&P)	18	18	100.00	17	17	100	19	19	100
4	Teacher AD (P&P)	18	18	100	17	17	100	15	15	100
5	Teacher AE (PDA)	13	17	76.47	14	16	87.50	16	16	100
	First Grade									
6	Teacher AF (P&P)	17	18	94.44	16	17	94.12	17	17	100
7	Teacher AG (PDA)	19	19	100.00	18	18	100	15	16	93.75
	Crossnore- Avery Co.									
	Kindergarten									
8	Teacher AH (PDA)	12	16	75.00	15	15	100	14	14	100
9	Teacher AI (PDA)	15	15	100.00	14	14	100	14	14	100
	First Grade									
10	Teacher AJ (PDA)	20	20	100.00	20	20	100	19	19	100
11	Teacher AK (PDA)	10	10	100.00	9	9	100	10	10	100
	Hazelwood- Haywood Co.									
	Kindergarten									
12	Teacher AL (PDA)	20	20	100.00	20	21	95.24	20	20	100
13	Teacher AM (P&P)	22	22	100.00	21	21	100	21	21	100
14	Teacher AN (P&P)	12	12	100.00	12	12	100	12	12	100
15	Teacher AO (PDA)	21	21	100.00	21	22	95.454	21	21	100
	First Grade									
16	Teacher AP (P&P)	20	20	100.00	20	20	100	20	20	100
17	Teacher AQ (P&P)	22	22	100.00	22	22	100	22	22	100
18	Teacher AR (PDA)	21	21	100.00	22	22	100	22	22	100
19	Teacher AS (PDA)	18	21	85.71	20	20	100	20	20	100
	Aulander- Bertie Co.									
	Kindergarten									
20	Teacher AT (PDA)	20	20	100.00	20	20	100	20	20	100
	First Grade									
21	Teacher AU (PDA)	11	13	84.62	10	13	76.92	13	13	100
22	Teacher AV (PDA)	11	12	91.67	12	12	100	12	12	100
	Williamston Pr.- Martin Co.									
	Kindergarten									
23	Teacher AW (P&P)	20	20	100.00	17	17	100	16	16	100
24	Teacher AX (PDA)	19	19	100.00	19	19	100	19	19	100
25	Teacher AY (P&P)	20	20	100.00	19	19	100	17	17	100
26	Teacher AZ (P&P)	19	19	100.00	19	19	100	19	19	100
27	Teacher BA (PDA)	19	19	100.00	19	19	100	19	19	100
28	Teacher BB (PDA)	19	19	100.00	18	18	100	18	18	100
29	Teacher BC (PDA)	19	19	100.00	18	19	94.74	19	19	100
	First Grade									
30	Teacher BD (P&P)	18	18	100.00	13	18	72.22	11	18	61.11
31	Teacher BE (PDA)	16	17	94.12	18	18	100	18	18	100
32	Teacher BF (PDA)	15	15	100.00	14	15	93.33	14	14	100
33	Teacher BG (P&P)	16	16	100.00	16	16	100	15	15	100
34	Teacher BH (PDA)	18	18	100.00	18	18	100	6	18	33.33
35	Teacher BI (PDA)	16	17	94.12	12	15	80	15	16	93.75

36	Teacher BJ (P&P)	19	19	100.00	19	19	100	19	19	100
	Scotland Neck- Halifax Co.									
	Kindergarten									
37	Teacher BK (PDA)	14	14	100.00	13	13	100	13	13	100
38	Teacher BL (PDA)	14	14	100.00	14	14	100	14	14	100
	First Grade									
39	Teacher BM (PDA)	18	18	100.00	16	18	88.89	18	18	100
	Riverside Elem.- Avery Co.									
	Kindergarten									
	First Grade									
	Manteo Elem.- Dare Co.									
	Kindergarten									
40	Teacher BN (P&P)	19	19	100.00	19	19	100	19	19	100
41	Teacher BO (P&P)	19	19	100.00	18	19	94.74	18	18	100
42	Teacher BP (PDA)	18	18	100.00	18	18	100	18	19	94.74
43	Teacher BQ (PDA)	18	18	100.00	14	17	82.35	17	17	100
44	Teacher BR (PDA)	17	19	89.47	13	19	68.42	17	18	94.44
45	Teacher BS (P&P)	19	19	100.00	19	19	100	18	19	94.74
	First Grade									
46	Teacher BT (P&P)	21	21	100.00	20	20	100	19	20	95
47	Teacher BU (PDA)	20	20	100.00	9	20	45	14	19	73.68
48	Teacher BV (PDA)	19	22	86.36	21	21	100	21	21	100
49	Teacher BW (P&P)	22	22	100.00	22	22	100	2	22	9.09
50	Teacher BX (P&P)	22	22	100.00	22	22	100	20	20	100
	Bellamy Elem.- New Hanover									
	Kindergarten									
51	Teacher BY (P&P)	18	18	100.00	18	18	100	18	18	100
52	Teacher BZ (PDA)	17	17	100.00	17	17	100	17	17	100
53	Teacher CA (PDA)	17	17	100.00	17	17	100	16	16	100
54	Teacher CB (P&P)	19	19	100.00	18	19	94.74	18	18	100
55	Teacher CC (PDA)	18	18	100.00	18	18	100	17	17	100
	First Grade									
56	Teacher CD (PDA)	10	23	43.48	21	22	95.45	22	23	95.65
57	Teacher CE (P&P)	23	23	100.00	23	23	100	24	24	100
58	Teacher CF (PDA)	12	21	57.14	21	21	100	21	22	95.45
59	Teacher CG (P&P)	22	22	100.00	21	21	100	15	22	68.18
	Weldon Elem.- Weldon City									
	Kindergarten									
60	Teacher C H(PDA)	21	21	100.00	14	23	60.87	21	21	100
61	Teacher CI (PDA)	22	22	100.00	19	22	86.36	22	22	100
	First Grade									

	Aurelian Springs- Halifax Co.									
	Kindergarten									
62	Teacher CJ (PDA)	19	20	95.00	19	19	100	21	21	100
63	Teacher CK (PDA)	20	20	100.00	20	20	100	20	20	100
	First Grade									
64	Teacher CL (PDA)	23	24	95.83	20	23	86.96	22	23	95.65
65	Teacher CM (PDA)	23	23	100.00	22	22	100	22	22	100
	Smithfield- CMS									
	Kindergarten									
	First Grade									
	Sternberger- Gilford Co.									
	Kindergarten									
66	Teacher CN (PDA)	23	23	100.00	22	22	100.00	22	22	100
67	Teacher CO (PDA)	21	21	100.00	21	21	100.00	22	22	100
	K-1 Combination									
68	Teacher CP (PDA)	12	12	100.00	12	12	100.00	12	12	100
	First Grade									
69	Teacher CQ (PDA)	24	24	100.00	23	23	100.00	24	24	100
70	Teacher CR (PDA)	24	24	100.00	24	24	100.00	24	24	100
		1265	1317	96.05%	1243	1301	95.54%	1227	1287	95.34%

2. How widely and regularly is the assessment administered?

Table 3 below shows the number of students that were assessed during each of the assessment windows (AW) for LEAs. The numbers are relatively compatible across the Assessment Windows. The numbers that are not displayed are the ones that are given *between assessment windows* for more of a progress monitoring purpose. Teachers were encouraged to administer an assessment when they noticed that a student had made progress in the targeted skills and concepts. Further, this data does not reflect *how many assessments were administered to each student* during each AW. During the BoP Assessment Window, all teachers only assessed students with the one keystone assessment for the grade level. But during the MoP and EoP windows, teachers may have given two or three different assessments per student, based on his abilities at the time. The flow-charts provided by DPI indicated how a teacher was to determine which assessments to administer under which conditions. So, a particular teacher may show 19 students assessed, but she may have actually done 32 assessments with some students getting two or even three assessments.

Table 3. Totals of students assessed in mathematics in each Assessment Window. (Only schools/LEAs and teachers with the most complete data are included).

County	BoP AW	MoP AW	EoP AW
Avery County	103	101	102
Bertie County	42	42	45
Cumberland County	109	118	114
Dare County	214	195	183
Guilford County	104	102	104
Halifax County	131	124	130
Haywood County	156	158	158
Martin County	253	239	225
New Hanover County	156	174	168
Weldon City Schools	43	33	43
Totals	1,311	1,286	1,272

Teachers clearly were completing the assessments with eligible students.

3. What reports to teachers access and report using?

Data were gathered during each assessment window with one-on-one teacher interviews and/or focus groups by DPI consultants. During the first assessment window, teachers did not use a lot of the online services to access data. Some of the pencil & paper teachers did use the resources in the manual to manually disaggregate the data. Not only did this take a significant amount of time, most did this task at home, but it was even difficult to figure out what it meant instructionally. Generally, it was the second assessment window that the vast majority of teachers started accessing online reports.

After the first assessment window, teachers did have an idea about general trends of where students were in their mathematical understanding and the students' abilities were usually much lower than what the teachers expected. As a part of the assessment scoring, teachers identified the numbers students were working with comfortably, and where their instructional "edge" was. Teachers used these numbers with their students to guide instruction, particularly with the work stations. After the second assessment window, a majority of teachers used the "Class Summary Report." It

has the names of students in a roster format, and across the columns, it indicates where students perform. Teachers could look down a column (for counting to 12, for instance) and determine students who are not performing to that level, those who are working at that level currently, and those who have already mastered that level. As Graph 1 illustrates, this is the most commonly used report by teachers across the MoP and EoP assessment windows.

Teachers reported using this information to decide what work stations or centers need to be available, for grouping students for small group instruction, and for one-on-one instruction for struggling students. Some teachers reported referring to this report when determining grades for the report cards.

Teachers did report also using the individual student reports: the Student Detail Report that shows how a student did on the last given assessment, and the Student Progress Report shows the results of all of the times a given assessment was administered to show progress over time. By far, the most common use of these reports was to gather information on struggling students. This might be to document a lack of progress, or to share with parents specifics about what the child should be able to do versus where she is currently operating.

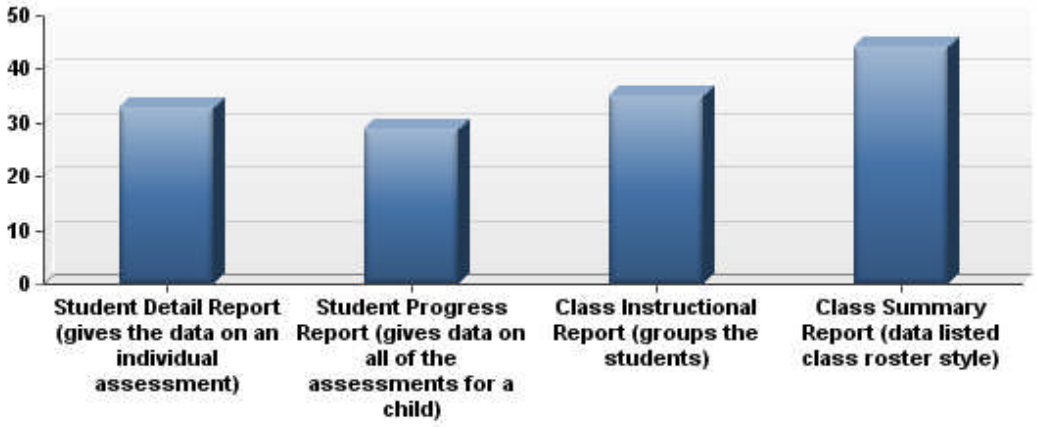
The Class Instruction Report groups students for small group instruction, and teachers generally liked the idea of using them, but in practice they found it easier to use the Class Summary Report described above. Those teachers who did try to use it found it somewhat confusing as not all students in the class showed up on a given printout. Didax was aware of this problem and have updated this report to fix this glitch. The Student Benchmark Report indicates students who have met and those who have not met a predetermined benchmark for the given assessment. For instance with the Counting Objects assessment, this report can show children who have mastered counting to 21 and making a pile of 12. Very few teachers used this report, but discussing their class's results for the year by using this report was a part of the final teacher interviews, which may create some interest in using the report during the second year of the pilot.

Graph 1. Assessment reports teachers reported using regularly on End-of-Year Survey.

4. How do teachers use the data generated from the assessments?

Within the training from the Math Perspective trainers, three main instructional responses were discussed, whole group instruction, small group instruction, and independent "work stations," or centers. The trainers discussed how the reports could be used to determine what concepts and skills needed to be reinforced, as well as what instructional decisions could be made with the resources that were provided.

Table 4 shows how teachers responded on the End-of-Year survey to the question of, "How often did you use work stations based in the information from the assessments?" Seventy-two percent of the teachers responding (n=53) reported using the information



from the assessments to provide work stations on a weekly basis.

Table 4. Teacher responses regarding the frequency of use of work stations based on assessment data.

Answer	Response	%
Daily	13	18%
2-3 Times a Week	28	38%
Once a Week	12	16%
2-3 Times a Month	10	14%
Once a Month	4	5%

Answer	Response	%
Less than Once a Month	6	8%
Never	1	1%
Total	74	100%

Table 5 shows similar data for using small group instruction for math on a weekly basis. Seventy-two percent were using the assessmentdata to provide small group math instruction at least once a week.

Table 5. Teacher responses to the number of times they use assessment data to work with small groups for math instruction.

Answer	Response	%
Daily	6	8%
2-3 Times a Week	30	41%
Once a Week	17	23%
2-3 Times a Month	6	8%
Once a Month	4	5%
Less than Once a Month	5	7%
Never	6	8%
Total	74	100%

Although this is teacher self-reporting, the consultants that visited the schools were able to see many lessons in progress, and they talked with teachers about trends they were seeing with their students, progress, and sometimes a lack of progress for one or more students. The informal observations would support this data.

5. How did teachers feel about using the technology (PDAs) for assessment purposes?

There was a wide range of abilities with the PDAs, as well as varying comfort levels. In the End-of Year survey, teachers were asked how they felt about using the technology at

the beginning of the project, and then at the end of the project. Table 6 shows how teachers reported feeling at the beginning of the project, and Table 7 shows how they felt at the end of year 1.

Table 6. Responses by teachers about how they felt using the PDA technology at the beginning of the pilot project.

Answer	Response	%
Very uncomfortable	11	14%
Uncomfortable	14	17%
Alright	30	37%
Very good	26	32%
Total	81	100%

Table 7. Teachers responses to how they felt about using the PDA technology at the end of Year 1 of the pilot.

Answer	Response	%
Very Uncomfortable	7	9%
Uncomfortable	3	4%
Alright	24	29%
Very good	48	59%
Total	82	100%

In the beginning of the pilot project, 25 teachers, or 31%, felt uncomfortable or very uncomfortable with the use of the PDAs. At the end of the year, only 10 participants, or 13% still felt uncomfortable or very uncomfortable. Table 8 shows the responses to the

question as to whether teachers had experience with the PDAs prior to this project. Exactly 25 teachers indicated that they had no prior experience with the devices. It is reasonable to assume that due to the training, and the use of the devices, 15 of the original 25 people who were uncomfortable with using PDAs gained confidence and moved into feeling alright or very good about using them.

Table 8. Responses to the question regarding teachers' prior use of PDAs.

Answer	Response	%
Yes, used for doing reading assessments	54	66%
Yes, for personal use	3	4%
No, did not use a PDA before this project	25	30%
Total	82	100%

Finally, there was an open ended question about what was teachers' favorite part of using the PDAs. There were 75 people who responded to the question, and the responses were grouped by theme for analysis. Many responses had more than one theme within the answer, so they were recorded in both places, making for 101 reasons why teachers liked the technology aspect of the assessments. Thirty-eight responses (half of the responses) were about having ready access to the reports. "Quick turnaround on the results" is a representative comment. Twenty-six teachers stated that the technology made the assessment easier and/or faster. One teacher's comment was that, "It made assessments much easier and quicker to assess and analyze data than doing it on paper and pencil." Twelve respondents stated that the PDA made the assessment easier to do, five made a related comment on it being less subjective. Several made comments about how the PDA told you what to do next, and it would take you to the next level during the assessment as needed. Nine people directly stated that it was nice to be able to use less paper. Seven teachers made comments about how the use of the technology provided instant information to be able to make curricular decisions or to be able to keep up with student progress better. Two people spoke to the ease of using it because they were already familiar with it. Two comments were not clear as to how it applied to the technology. Overall, teachers were pleased with the information that they got from the assessments and the ease of getting the data from the website.

6. What support do teachers need in order to implement an assessment system using PDAs?

There were several aspects of the implementation of the project that teachers needed support with, but overall, the project ran smoothly. The technology was the biggest area of need, and then there are aspects of the training that need to be in place when thinking towards a broader implementation of mathematics assessments.

The use of the PDA caused the most problems during the eight months of the pilot project. First, it was difficult to get PDAs because they are becoming outdated equipment. Not only are companies like Palm not making them anymore, but districts with a forward thinking IT department wouldn't allow the schools to purchase them. Almost half of the participating schools had them for reading assessments, but they are getting old, and are having battery issues, and break-downs. The schools in Avery County and Cumberland County had the most difficult time throughout the project with synching the PDA to the website. The Avery schools had purchased Nokias that need a strong wireless service, which is not available in the schools in the mountains. It was not clear what the problem with the network service in Cumberland County was. They had problems such as only half of the class list showing up on the PDA, and synching one day but not the next. The assessments had clearly been done on the PDA, but they were not showing up on the website after trying to synch. This created problems with having complete data for these schools.

Another technology glitch was that the school LEA's firewalls blocked access to the Didax site, and did not allow the necessary software to be loaded onto the computers in the teachers' classrooms. The school in Charlotte-Mecklenburg Schools had problems with these issues the entire school year. They were only able to get one computer in the school set up as a synching station, and then even at the end of the year there were server problems at the district level that prevented data from being downloaded during the stated Assessment Window. It was not clear whether the LEA was supporting the project given all of the roadblocks.

Unfortunately, even with the push in previous years for teacher literacy in technology issues, there remains a good number of teachers who do not have the knowledge base to set up the PDAs, or to be able to troubleshoot when something goes wrong. A few schools had a technology person at the site who was able to jump in and figure things out, but most of the schools did not. Some did utilize the IT people at

Didax, but a few didn't even go that far and waited until the DPI Consultant visited to get things fixed. This sometimes meant that assessments were not done in a timely manner, or they were not reported in a timely manner. From all reports, and from personal use, the IT people at Didax were extremely friendly and were able to fix most of the problems by phone when they were contacted.

Some of these problems may become non-issues as Didax upgrades the technology service. For this current school year, 2010-2011, Didax has made the assessments available through an online format. This makes the PDA unnecessary. Any laptop computer, PC or MAC, which is connected to the internet, would be able to be used as a testing site. This eliminates the need for synching, downloading software, support from the LEA level IT department, or even the purchase of hardware that is only used for one purpose.

A recommendation for those involved in the implementation of mathematics assessments with a technology base is to require schools to have one person, an IT person, Assistant Principal, or someone else who is proficient with technology to get extra training on the use of the system and troubleshooting tips. The teachers who did have one person in the building that could help with these problems reported that having such a person was a necessity.

The curriculum aspect was the other area of focus for support that teachers will need. With the focus on literacy instruction for a number of years now, the practices that are research based have now firmly taken hold in the vast majority of classrooms around the state. Mathematics reform and the implementation of research based practices are just now getting a hand hold on classroom instruction. These particular mathematics assessments that were used for this project will help guide teachers into using instructional practices that will build a solid foundation of number sense to prepare all children for mastery of the Common Core Standards. Without a move towards instructional practices that parallel reading practices (small group instruction with targeted learning goals based on a child's previous performance, whole group practice to encourage student communication, and individual practice of skills in a hands-on engaging form), children will continue to be left with gaps in understanding and a list of procedures that are meaningless. As we have already seen, this creates a foundation with gaping holes leaving students without the knowledge to build on in order to learn and understand algebra and geometry. This being said, the "train the trainer" model, where one teacher from a school is sent to get trained, to be able to come back and train

the rest of the teachers at her school, will not be sufficient. One of the reasons for the success of this project so far, is that each classroom teacher got trained by very experienced and knowledgeable trainers who have used the assessments and instructional practices in their own classrooms. In making a plan to implement this type of assessment, trainers for the state need to be knowledgeable about the assessments themselves, the mathematics behind the assessments, and the research on early childhood mathematics. After the 1st Assessment Window, most teachers felt that the training was indispensible as far as their comfort in being able to go back to school and administer an assessment that was very different for mathematics, as well as being able to use the results to alter how they have been teaching math to better meet student needs. A tiered approach to staff development in each of the regions would help ensure that the message does not get diluted or changed to fit the current mathematics instruction paradigm.

The DPI Consultants visiting schools each Assessment Window helped teachers maintain the energy for fully using the assessments, as well as answering questions, and providing moral support to teachers who are trying new instructional practices. This model of having someone come into the school is instrumental in overcoming the, "I'm going to close my door and do what I want" barrier to moving forward with a new understanding of how children learn mathematics. Even though the visits by the consultants were not regulatory in nature, teachers did make sure they were completing assessments before the consultant arrived. Teachers who did not follow-through on the 1st Assessment Window, did so the remaining two windows in anticipation of the consultant's arrival.

The most often asked questions were actually about the flow charts and how to decide which assessment(s) a student needed. This is an area that remained somewhat cloudy, and needs continued research to help define what the state wants for proficient mathematics skills and concepts for Kindergarten and first grade students. DPI has not in recent history given teachers benchmark or "cut-off scores" for primary grade children. If the Department is moving in that direction, these teachers will be invaluable in helping to make determinations about appropriate benchmark scores.

One aspect of how schools accomplished getting the assessments done was in providing coverage of classes so that teachers could focus on doing assessments. Where there are curriculum people in the school, Instructional Resource Teachers or Coaches, teachers were often provided with a schedule of when there would be

coverage for their class so they could take students to a separate room to do the interview assessments. Usually the classes were covered by Teacher Assistants, for an hour or two. This is not a necessity, but makes assessing much more manageable for teachers. However, several schools that did very well on getting the assessment done within the time constraints did so with teachers using student independent work station time to pull students for the individual assessments. They were able to do so without an assistant. Having coverage did give teachers the opportunity to think about each child with undivided attention, making the transition from testing to individualized instruction much more likely to occur. Although coverage clearly is not necessary, it does have benefits that are worthy of making coverage an integral part of the Assessment Windows.

Finally, and probably most importantly, is the need to be sure the school administrator is on board with the new form of assessing as well as the type of instruction that necessarily follows from getting data about students. Principals need to be openly supportive of instructional practices that are no longer whole class, work in workbooks instruction. In the one school that had minimal support from the principal, the teachers did not understand or see the link between the assessments and their instruction on the *Standard Course of Study*. The teachers reported that the lesson plan format from the principal did not allow for small group instruction, or independent work stations. The week-by-week district pacing guide was also very stringently followed at this school, whether or not students showed mastery of concepts before moving on. The students at this school showed little growth in the targeted areas as a result. The recommendation for a wider implementation would be informational and training sessions for Principals, as well as LEA central office curriculum people to create an environment where teachers can use assessments formatively within a district pacing guide.

Final Thoughts

Overall, this pilot project may end up being ground breaking work in North Carolina. In comparing these assessments to the DPI *K-2 Assessments*, the other consultant and I found that the DPI assessments were not focusing on the key concepts for primary age students. Focusing Primary teachers to the key areas of mathematics understanding in Number and Geometry, and providing resources to meet a variety of student needs can move mathematics instruction ahead in North Carolina to prepare

students for understanding the goals of the *Common Core*. The teachers in this pilot project could hardly contain their excitement whenever I visited and started asking questions about the assessments and their classroom instruction. These teachers will become invaluable resources for moving ahead with a wider implementation in the state because of the knowledge they have gained through this process. The technology is definitely a welcome addition. But, the real advantage is the assessment of essential mathematics understandings, and helping teachers to meet the learning needs of all students.

Final Evaluation Report

Diagnostic Reading Assessment Pilot Program (DRAP)

prepared for the North Carolina Department of Public Instruction

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DRAP PILOT FINAL REPORT AND DATA SUMMARY

This evaluation report summarized the data collected as part of the evaluation of the North Carolina Diagnostic Reading Assessment Pilot Program. The pilot program was initiated in November 2009 and continued through the end of the 2009-2010 academic school year that ended June 10, 2010. Schools were selected based on interest and location after completion of an online application to participate in the pilot program. The final pilot program resulted in the participation of 18 school districts, 47 schools, 402 classrooms, and 3,648 students (assessed). Of the 47 schools 8 were only used for additional data; they contracted individually with Wireless Generation, the program provider, and were not chosen in the same way as the pilots.

The purpose of this pilot program was to evaluate the use of Personal Digital Assistants (PDAs) in the classroom as assessment tools to guide instruction through formative assessment. PDAs were distributed to teachers who received training in how to use the PDAs in November 2009 and were then encouraged to practice with the technology in December 2009. These teachers were asked to use the PDAs, in lieu of paper and pencil assessments they had been using, to collect literacy information about their students. Specifically they were asked to use *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS) assessment information as well as *Text and Reading Comprehension* (TRC) information. Training sessions were coordinated by the NC Department of Public Instruction and conducted by Wireless Generation. Training sessions familiarized trainees with the use of the PDA, how to encode and decode data, how to conduct assessments, how to use that data to guide instruction. Training helped teachers develop confidence using the PDAs and allowed them to practice with trainers using actual student level data. Following training teachers were asked to use the PDAs to assess students throughout the remainder of the school year, which allowed teachers access to results immediately following assessments. Teachers then were asked to use these data to monitor students based on risk levels calculated by the PDA and adjust instruction to meet students needs.

The pilot project was divided into three key assessment periods: “Beginning of the Year (BOY)”, “Middle of the Year (MOY), and “End of the Year (EOY) . The BOY data were collected in December 2009 just after initial training for teachers practice and in addition provide a data baseline. The MOY data were collected by February 26, 2010. EOY data were collected through June 10, 2010. As teachers were still learning how to use the PDAs, BOY data are not included in this report. MOY and EOY data collection periods were used to provide the most accurate description of teacher use.

The evaluation had both outcome and process components. The outcome evaluation involved assessing the extent to which the project objectives were accomplished, which focused on improvement in teachers’ assessment practices using the PDAs. The process evaluation

entailed gathering information from project stakeholders to improve project operations. Data from Wireless Generation surveys, summaries from focus groups conducted by EvAP staff, and observations were used to compile the information for project operation improvement. The following questions were developed in collaboration with North Carolina Department of Public Instruction staff responsible for the project and were used to guide the external evaluation process; questions with asterisks (*) were identified by the NC State Board of Education:

A. Outcome Evaluation:

1.* Will the use of technology increase the fidelity of the assessment?
2.*. Will teachers use the information and data to guide their daily instruction?
3. How widely and regularly was the assessment administered?
4. Were teachers highly qualified to administer the assessment?
5. How comfortable were the assessors with assessing and using assessment results?
6.* Is formative assessment/progress monitoring being used and how?
7.* How do teachers use the data generated from the assessments?

B. Process Evaluation

8. What support do teachers need to implement an assessment system using PDAs?

Data Collection

Data collection for the project involved gathering information from NC DPI data files, school data files, and focus groups transcripts. Information from comparison schools was used to evaluate the successful completion of the project objectives. Focus group sessions were conducted in four Brunswick County schools: Lincoln Elementary School, Town Creek Elementary School, Supply Elementary School and Belville Elementary School. As shown in Table 1 below a total of 18 teachers participated in the four focus groups with some variation by grade level, number of teaching assistants and experience. Three of the four schools were participating in the pilot program; the fourth school was used as a comparison school to evaluate the contrasts, if any, present between PDA (electronic) assessments and paper (manual) assessments. Ten teachers at two of the three participating schools, where focus groups were conducted, had previous PDA DIBELS assessments experience; five teachers had no experience (N=0). None of the teachers in any of the focus groups had previous experience with the electronic TRC.

Table 1. Teachers Participating in Focus Groups

		Grade Level							
School	Number of Teachers	K	1st	2nd	3rd	4th	Number of Teaching Assts	PDA DIBELS Experience In Years	PDA TRC Experience in Years
Supply	5	1	3	-	-	1	4	0	0

Lincoln	6	3	2	-	-	1	3	5	0
Town Creek	4	1	2	-	-	1	1	5	0
Belville	3	1	1	1	-	-	1	0	0
TOTALS	18	6	8	1	-	3	9		

Outcome Evaluation Findings

1. Will the use of technology increase the fidelity of the assessment?

To the question about the pilot project increasing the fidelity of the assessment, data were gathered in terms of teacher use of assessments through the PDA online database as well as by focus groups. The data summary in Table 2 shares teachers' assessment use by district and school. The summary reveals the frequency teachers used the PDA assessment system and the whether or not their use increased or decreased over the allotted time period. Evaluation of the MOY and EOY assessment periods disclose the degree to which assessment of students during the MOY and EOY assessment phases has improved. The vast majority of teachers assessed between 16 and 25 students during both assessment periods.

Table 3 below shows some variation in the number of teachers who performed assessments for the provided student ranges during the MOY and EOY assessment periods. However, the average difference in percentages for this period is only 1.8%. All of the teachers who participated in the pilot program assessed at least one student. Only 1% (n=4) of the total teachers (n=402) conducted assessments for more than 25 students during the MOY period, and 2.5% (n=10) of the teachers (N=401) conducted assessments for more than 25 students during the EOY period indicating expanded use of assessments in the general classroom. Similarly there were small percentage differences on the other end of the range

Table 2. Number of Teachers Performing Assessments by Student Range: District Frequency Patterns (Data for Highland Charter School and Mitchell County are not included due to reporting problems)

	Number of Teachers							
District	0 Students Assessed	1-5 Students Assessed	6-10 Students Assessed	11-15 Students Assessed	16-20 Students Assessed	21-25 Students Assessed	25+ Students Assessed	**Teachers in Pilot Project Completing Assessments**
Avery								
MOY	-	10	9	10	19	10	-	58
EOY	-	7	12	9	20	9	1	
Brunswick								
MOY	-	4	-	2	22	10	-	38
EOY	-	2	1	2	20	13	-	
Burke								
MOY	-	-	-	2	2	1	-	5
EOY	-	-	-	2	2	1	-	
Columbus								
MOY	-	-	-	3	6	1	-	10
EOY	-	-	-	2	7	1	-	
Cumberland								
MOY	-	-	-	2	15	2	-	19
EOY	-	-	-	1	13	5	-	
Gaston								
MOY	-	2	-	-	13	7	-	22
EOY	-	2	-	-	13	7	-	
Halifax								
MOY	-	1	-	-	1	1	-	3
EOY	-	1	-	-	1	1	-	
McDowell								
MOY	-	-	-	1	2	6	1	10
EOY	-	-	-	1	2	7	-	
New Hanover								
MOY	-	2	3	6	53	52	1	117
EOY	-	1	4	2	47	58	5	
Onslow								
MOY	-	-	2	-	15	18	1	36
EOY	-	1	1	1	10	21	2	
Pamlico								
MOY	-	-	-	-	11	-	-	11
EOY	-	-	-	-	10	1	-	
Richmond								
MOY	-	-	-	1	8	8	-	17
EOY	-	-	-	1	8	8	-	
Roanoke Rpd								
MOY	-	-	-	2	10	-	-	12
EOY	-	-	-	1	11	-	-	
Sampson								
MOY	-	1	1	1	13	6	-	22
EOY	-	2	1	2	15	2	-	
Yadkin								
MOY	-	-	-	2	2	4	-	8
EOY	-	-	-	1	3	4	-	
Yancey								
MOY	-	-	-	1	3	5	-	9
EOY	-	-	-	-	4	4	1	

TOTAL								
MOY								
	-	20	18	34	195	131	4	402
EOY	-	16	22	25	186	142	10	401

Table 3 below lists the number of students assess at each participating school during the Middle of the Year (MOY) and the End of the Year (EOY), which demonstrate fairly consistent numbers.

Table 3. Total Number of Students Assessed by Each School for Two Assessment Periods

District	Schools	MOY	EOY
Avery	Banner Elk Elementary*	119	116
	Beech Mountain Elementary*	11	11
	Crossnore Elementary*	192	187
	Freedom Trail Elementary*	216	212
	Newland Elementary*	199	218
	Riverside Elementary*	87	112
Brunswick	Lincoln Elementary	146	143
	Lincoln Intermediate	95	91
	Supply Elementary	193	188
	Supply Intermediate	115	107
	Town Creek Elementary	139	133
	Town Creek Intermediate	79	72
Burke	Hillcrest Elementary	67	64
	Hillcrest Intermediate	23	23
Columbus	Acme Delco Elementary	182	179
Cumberland	Gallberry Farm Elementary	238	245
	Gallberry Farm Intermediate	105	112
Gaston	Ida Rankin Elementary*	424	424
Halifax	Pittman Elementary	47	46
Highland Charter	Highland Charter	52	49
McDowell	West Marion Elementary	127	128
	West Marion Intermediate	81	81
Mitchell	Tipton Hill Elementary	28	27
	Tipton Hill Intermediate	15	-
New Hanover	Anderson Elementary	400	406
	Bradley Creek Elementary	282	287
	Gregory Math-Science-Technology	328	322
	Murrayville Elementary	517	544
	Ogden Elementary	360	346
	Parsley Elementary	315	371
	Rachel Freeman Elementary	53	52
	Snipes Elementary	74	76
Onslow	Blue Creek Elementary	198	179
	Carolina Forest Elementary	184	183
	Jacksonville Commons Elementary	240	231
	Jacksonville Commons Intermediate	129	156
Pamlico	Pamlico County Primary	206	209
Richmond	L J Bell Elementary	244	247
	L J Bell Intermediate	88	88
Roanoke Rapids	Belmont Elementary *	221	222
Sampson	Clement Elementary	130	133
	Clement Intermediate	54	53

	Plain View Elementary	144	140
	Plain View Intermediate	78	65
Yadkin	Boonville Elementary	89	92
	Boonville Intermediate	64	64
Yancey	Burnsville Elementary	184	196

***Schools not selected into the program but using PDAs for assessment**

The Reading 3D Pilot Survey by Wireless Generation was distributed to all teachers participating in the pilot program. There were a total of 83 respondents who returned the survey completed. In response to a question asking teachers whether or not their institution utilizes any process to analyze assessment fidelity and accuracy, 30 responded that their institution provided no information about fidelity and accuracy. Of the remaining teachers, 39 indicated that there was a basic or developing process in place (47% of respondents), while 8 teachers responded that there was an integrated-formal process with reliability checks in place (10% of respondents).

2. Will teachers use the information and data to guide their daily instruction?

Data were collected from four focus groups to determine how teachers used assessment data to guide daily instruction in their classrooms. All of the teachers indicated that instruction occurs mainly in small groups although some one-on-one instruction is utilized. More specifically, teachers expressed that literacy assessments were used for one-on-one instruction, ability grouping, grading, and progress reports. All teachers stated that the assessments enabled them to provide more comprehensive lesson plans. Teachers also indicated that the assessments assisted them in targeting long term goals as well as short term goals for instruction. Teachers also reported that the electronic data have allowed them to more easily differentiate instruction due to ease of access. By supplying teachers with immediate results that are electronically compiled, teachers stated that instruction is more specific. One teacher commented, “This data informed my instruction by allowing me to identify needs in the areas of fluency, vocabulary, and comprehension.” Teachers from the comparison school who are not using the electronic version of the DIBELS (n=3) were using a multitude of assessments to construct teaching strategies and interventions. All of the teachers in the paper DIBELS focus group utilized small reading groups as a result of their assessment data. Small group skill building in other content areas and whole group guided reading were other ways that teachers in this group used assessment data. All of the teachers in the paper DIBELS focus group indicated that most student growth occurs in small group skill building sessions used on a daily basis. Overall, teachers from the combined focus group sessions advocated unanimously that assessments were necessary to guide daily instruction in order to increase teacher awareness as well as student achievement. Teachers using the PDA system still used other assessment tools, but promoted the use of electronic data as the mainframe of literacy assessment results. The other literacy assessment tools are used to validate the PDA electronic scores.

The Reading 3D Pilot Survey also addressed teachers’ use of data to inform instruction. Among the 83 respondents, 27 (33%) indicated that they use basic-share strategies to address instructional needs geared toward benchmark progress and also use the data to progress monitor students in between benchmark assessments. On the same survey, 40 respondents (48%) indicated that they implement differentiated instruction among small groups of staff to target

benchmark progress using progress monitoring. Only 19% of the respondents (N=16) indicated that data were used in an integrated school-wide decision making process regarding instructional needs and support, including curriculum.

3. How widely and regularly is the assessment administered?

Table 4 below shows the number of student assessments conducted by district during the benchmark periods (MOY, and EOY), showing fairly comparable numbers between the two periods.

Focus group responses provided more information about the frequency of administering literacy assessments. All teachers expressed that progress monitoring occurs more frequently than benchmark assessments, which are only administered during the MOY and EOY periods. However, progress monitoring is administered on an ability-based frequency provided by the PDA recommendations which range from weekly to monthly. The assessments are used on a weekly basis to determine when and where further strategies and assessments are needed to reinforce skill acquisition.

Table 4. Number of Students Assessed by District at Middle of Year (MOY) and End of Year (EOY)

District	MOY	EOY
Avery	824	826
Brunswick	767	734
Burke	90	87
Columbus	182	179
Cumberland	343	357
Gaston	424	424
Halifax	47	46
Highland	52	49
McDowell	208	209
Mitchell	43	27
New Hanover	2329	2404
Onslow	751	749
Pamlico	206	209
Richmond	332	335
Roanoke Rapids	221	222
Sampson County	406	391
Yadkin County	153	156
Yancey County	184	196
TOTAL	7562	7630

The Reading 3D Pilot Survey also addressed teachers' use of benchmark and progress monitoring data to evaluate the use of literacy materials in the schools. Most commonly benchmark data (n=31/83 respondents, 37%) were used to evaluate curricula, followed by progress monitoring data (n=30 respondents, 36%), which was used to modify instruction. Additionally, 39 respondents (47%) indicated that benchmark data were integrated in setting school-wide goals and represented an important and consistent factor.

4. Were teachers highly qualified to administer the assessment?

As part of the pilot program, teachers were trained by Wireless Generation in how to use the PDA to personally administer DIBELS and TRC assessments to their own students. Teachers were asked during the focus group sessions, if they felt highly qualified to personally administer these assessments. All teachers from the three schools participating in the pilot program (N=15) indicated that they felt highly qualified to administer the assessment to their students. All teachers also expressed the importance of knowing their students well enough to use the assessments along with other strategies to really remediate the specific challenges presented by each student. Ten teachers (66%) from this focus group had previous experience. Five teachers (33%) had no previous experience and expressed initial nervousness about using the PDAs. However, with continued training and technical support from Wireless Generation, those teachers stated that they felt highly qualified by the MOY benchmark assessment period and expected to conduct even more seamless assessments for the EOY period.

5. How comfortable were the assessors with assessing and using assessment results?

During the training sessions, teachers were instructed how to use the PDA to access data upon assessment completion in the form of scores, graphs, recommendations for instruction, recommendations for grouping, and recommendations for assessment frequency. The Reading 3D Pilot Survey results for this question indicated that 84% (n=70 of 83) teachers were at least comfortable with administering the assessments using the PDA after receiving training. Only 16% (n=13) of the teachers surveyed indicated that they were uncomfortable. Teachers (n=66, 79%) also acknowledged that the post-training practice period (referred to as the Beginning of the Year (BOY) was valuable. There were, however, 17 teachers (20%) who thought that the training was neither valuable nor useful. As 90% (n=75) of respondents already had experience using formative assessment prior to the pilot program, this might account for the 20% who thought the

training unnecessary. A little more than three-quarters of the teachers (n=63, 76%) reported that using the PDA technology to assess students has become easier; 13 teachers (16%) reported that the technology did not facilitate assessment, while 7 teachers (8%) indicated more difficulty in assessment practices. Although most of the teachers did indicate ease of use, they did describe the time required for assessments as time consuming (n=59, 71%). In contrast, 19 teachers (22%) observed that the time requirement was manageable, requiring little time within the normal schedule and daily classroom routine.

The focus group responses revealed that teachers felt comfortable accessing the electronic results of the assessment to share with students, share with parents during conferences, and guide daily instruction. However, some teachers asserted even though the assessments were informative and helped focus strategies toward specific content areas, they could reveal too many areas of concern with limited time for remediation; this was especially true for those without a teaching assistant to facilitate small group instruction and assist with informal assessments.

***6. Is formative assessment/progress monitoring being used and how?**

Formative assessment, also called progress monitoring, is a probe used between benchmarks to target specific content areas for remediation. According to Table 5, which shows the number of probes administered by teachers during the period, teachers were using progress monitoring with the DIBELS. District-wide, students received an average of 27 probes for the period studied. Teachers had a district-wide average of 23 students per classroom with 780 probes.

Table 5. DIBELS Progress Monitoring/Formative Assessment

District	# Teachers	# Students	# Probes	Mean #Probes Per Student	Mean# Probes per Teacher	Mean #Probes per Teacher per Quarter
Avery	14	329	21340	64.86	1524.29	381.07
Brunswick	11	402	3538	8.80	321.64	80.41
Burke	2	30	47	1.57	23.50	5.88
Columbus	5	101	765	7.57	153.00	38.25
Cumberland	7	170	755	4.44	107.86	26.96
Gaston	6	237	36512	154.06	6085.33	1521.33
Halifax	2	21	27	1.29	13.50	3.38
Highland	1	44	319	7.25	319.00	79.75
McDowell	3	106	1411	13.31	470.33	117.58
Mitchell	1	29	360	12.41	360.00	90.00
New Hanover	26	926	24567	26.53	944.88	236.22
Onslow	15	394	2610	6.62	174.00	43.50
Pamlico	5	132	330	2.50	66.00	16.50
Richmond	4	198	927	4.68	231.75	57.94
Roanoke Rapids	7	120	2312	19.27	330.29	82.57
Sampson	9	177	935	5.28	103.89	25.97
Yadkin	3	64	86	1.34	28.67	7.17
Yancey	4	122	563	4.61	140.75	35.19
TOTALS	125	3602	97404			
MEANS	6.94	200.11	5411.33	27.04	779.73	194.93

Table 6. below shows TRC results by district by the two time periods – Middle of Year (MOY) and End of Year (EOY). In all but two cases the number of assessment increased. In fact the overall average of assessment completed by district increased from 316.8 to 607.6 students. Clearly over time, teachers

Table 6. TRC Result by District by Time Period

School District	Number Assessed MOY	Number Assessed EOY		Above	Proficient	Below	Far Below
Avery	269	375	MOY	47.6	27.5	11.2	13.8
			EOY	24.5	22.9	22.7	29.9
Brunswick	735	519	MOY	41.6	39.3	9.1	9.9
			EOY	4.0	56.6	21.7	17.7
Burke	87	249	MOY	31.0	60.9	5.7	2.3
			EOY	55.7	29.7	7.8	6.8
Columbus	133	147	MOY	22.6	53.4	18.8	5.3
			EOY	16.0	74.7	5.3	4.0
Cumberland	227	1118	MOY	31.7	60.8	6.6	0.9
			EOY	13.0	52.8	23.1	11.1
Halifax	47	29	MOY	0.0	48.9	42.6	8.5
			EOY	25.2	55.3	13.5	6.0
Highland	51	75	MOY	0.0	78.4	11.8	9.8
			EOY	14.3	18.0	55.8	12.0
McDowell	208	461	MOY	28.8	43.8	13.0	14.4
			EOY	0.0	33.3	33.3	33.3
Mitchell	17	108	MOY	0.0	58.8	35.3	5.9
			EOY	13.0	52.8	23.1	11.1
New Hanover	1517	4456	MOY	34.3	49.0	6.8	9.9
			EOY	25.2	55.3	13.5	6.0
Onslow	729	1106	MOY	18.9	62.6	14.5	4.0
			EOY	14.3	18.0	55.8	12.0
Pamlico	197	339	MOY	19.8	67.5	10.2	2.5
			EOY	0.0	33.3	33.3	33.3
Richmond	248	217	MOY	31.5	43.1	14.5	10.9
			EOY	14.3	18.0	55.8	12.0
Sampson	325	320	MOY	42.2	40.0	8.6	9.2
			EOY	0.0	33.3	33.3	33.3
Yadkin	158	6	MOY	46.8	40.5	4.4	8.2
			EOY	0.0	33.3	33.3	33.3
Yancey	121	197	MOY	20.7	62.0	14.9	2.5
			EOY	4.6	64.5	23.9	7.1

Mean number of students assessed	316.8	607.6

were conducting more assessments. In looking at the percentage of students who were reported as above proficient, proficient, below proficient, and far below proficient, more students in need of assistance appear to be entering teachers' awareness through the PDA assessment systems. In all but three cases, a higher percentage of students are being identified a below proficient and in all but one case the same is true for those students deemed far below proficient. This would argue that use of the PDA assessment system is helping teachers identify more students in need of assistance.

7. How do teachers use the data generated from the assessments?

Teachers were asked how they use the data generated during the focus group sessions in order to verify how they actually use the immediately accessible data generated by the PDA. Teachers reported that the data were used to organize small groups with students of like ability as well as to differentiate those groups, and to encourage skill-building practices while still moving students forward. All of the focus group teachers (N=18, 100%) indicated that they used small group instruction to accommodate the pace of instruction for students of like abilities. Students who presented more challenges were progress-monitored more frequently as recommended by the electronically-generated data compilations. One teacher recalled, "I credit the palm pilot for allowing me to assess my students quickly and get data quickly to guide my instruction effectively." Another teacher observed, "By administering the DIBELS and TRC to my own students instead of having someone else administer the assessments, [this] helped me to have more of an impact on students, because I was able to identify areas where they were struggling (i.e. phonics, multisyllabic words, vocabulary, etc.)." One teacher who involved the teaching assistant in data interpretation stated, "The [classroom] staff has worked very hard to analyze our students' data and use this data to create differentiated instruction that take place in the afternoon . . . ." Teachers from the paper DIBELS school (N=3) indicated similar use of the data, but commonly used the data generated to validate other paper and computerized assessments that are used in the classroom.

PROCESS EVALUATION

8. What support do teachers need to implement an assessment system using PDAs?

Teachers expressed several strategies during the focus group sessions to assist with the support of PDAs in the classroom. All of the teachers who were participating in the pilot program (N=15) shared technical issues that arose with the use of the PDA. One teacher said that she had many syncing issues – server issues, firewalls, and cords. Teachers also expressed a desire to have a technician available on site to help; someone who is a technician by trade instead of having instructional technicians address technical issues. Other teachers expressed some concern about wait time for technical support. One teacher observed, "Technical support is great at addressing the issues when you can get through." No one mentioned the size of the screen as troublesome. Teachers who used a variety of literacy assessments observed that students didn't always place at the same level on different measures. For example the paper and pencil assessment for a particular child didn't always match the electronic media assessments. They also suggested that all of the "bugs need to be worked out" and "everyone needs to have the appropriate materials" so that other teachers will "buy into this new program."

Additionally, many teachers had comments related to acceptable characteristics for team leaders and trainers. One teacher commented, "Team leaders need to have credibility, dedication, and a willingness to be trained. Trainers who come from a teacher background take out the "us versus them" component."

Second only to technical issues, the TRC assessment was discussed at length by teachers during the focus group sessions. Some teachers admitted skipping over the time consuming parts of the TRC assessment after talking about the issue with other team members. One teacher disclosed that she used the TRC assessments orally because "[it] worked better" and she "had permission from Wireless Generation" to conduct the assessments in this fashion as another option. She also reported that she was told the writing part of the TRC is optional on the PDA system.

The Reading 3D Pilot Survey respondents in general were quite complimentary of the training and support they received. When asked to rate the training they received, 77% of the teachers (n=64) provided good to excellent ratings with only 17% (n=14) of the teachers observing room for improvement. Teachers also were asked to rate the time allotment for the post-training practice period. Of those responding 63% of the teachers (N=52) reviewed the training as good to excellent, while 29% (n=24) of the teachers determined that more time would be necessary. Teachers also evaluated the overall pilot's management and services provided by DPI. Teachers gave a 78% (n=65) approval rating while 21% (n=18) of the teachers considered the services to be inadequate. The pilot's management and services provided by Wireless Generation were also rated and 75% of the teachers (n=60; only 80 teachers responded to this

rating) felt that the supports were good to excellent while 25% (n=20) of the teachers felt that the services needed improvement.