



# The Role of Formative Assessment in Pre-K through Second Grade Classrooms

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## Summary

Formative assessments use observational protocols or diagnostic measures to provide educators with detailed information about a student's progress assimilating and representing knowledge and skills. Unlike summative tests, in which children are required to sit and answer questions for an extended period of time, well-designed formative assessments are powerful tools with which to assess the often rapid and frequently uneven growth and development of young children. While summative assessments confine how students display their knowledge for comparative purposes, formative assessments try to find the optimal conditions for making visible a young child's understanding in order to enhance it. The importance of drawing out early learner's thinking cannot be overstated.

Research on the effects of using formative assessments in the classroom shows a powerful effect on student achievement, with effect sizes ranging from 0.40 to 1.76. These results are attributed to a teacher's ability to monitor what students know and how they understand it, the specific types of feedback that teachers provide to students based on their performance, and the specific actions that teachers take when responding to student results. Formative assessments that are supported through the use of technology have been found to:

- Increase efficiency when administering an assessment;
- Increase accuracy of the timed components of an assessment;
- Decrease administrative tasks, as the need for data entry is eliminated;
- Improve access to data since assessment information is available immediately upon completion of an assessment; and
- Improve the relevance of the data for teachers.

Over the past decade researchers working in the field have identified key components of effective formative assessments. The research literature suggests that well-designed formative assessments are:

- Built on solid cognitive, developmental, and educational research;
- Valid and reliable;
- Used to monitor student progress so that early intervention becomes a routine part of the learning process;
- Used regularly to inform instruction; and
- Learner-friendly and enable students to understand the teacher's learning intentions and what constitutes success.

Formative assessments make students' thinking visible and generate data that can be used to directly inform instructional practices; that is, data that delves underneath factual knowledge to probe student's understanding. Effective formative assessments reveal the background knowledge and the kinds of conceptual strategies a student uses to solve a problem. How a student arrives at an answer is as important as the answer itself.

## Overview

Can Jane tie her own shoes? If you wanted to know, you would probably ask her to demonstrate. She might need a little extra help in making an effective knot. Learning is a process. Students are not only exposed to knowledge; they also absorb, apply, refine and deepen their knowledge. The only way to gauge a student's progress, and thereby guide this process, is through assessment. While summative assessments—tests—send shivers through students and educators alike, there's much more to assessment and its usefulness in education than "pencils down" high-stakes measures. Jane, for example, may understand how to tie a knot but not make it tight, so her laces always come undone. If we only look at her effort as failure, she might be grouped with kids who are struggling to grab their laces or who do not understand the concept of a knot. Observing Jane closely, however, diagnoses the real issue, which can be quickly remedied, affording more time for those in greater need. Meanwhile, Jane can move on to mastering a new skill.

While this example is simplistic, the power of formative assessment is not: Formative assessments are diagnostic tools for improving student learning and instructional practice. More specifically, formative assessments use observational protocols or diagnostic measures to provide educators with detailed evidence about a student's progress in assimilating and representing knowledge and skills. The best are firmly anchored in current cognitive and developmental research on how young children learn. Educators can use formative assessments to identify students at risk, determine their specific instructional needs, and adjust instruction. Because these measures can be administered more frequently, educators can monitor student progress more closely. One bad week will not affect Jane the way it might on a summative measure because she will have a dozen more check-in points throughout the school year. When administered thoughtfully and consistently, formative assessments can sharpen every educator's teaching by zeroing in on students' individual academic strengths and weaknesses. They can also actively involve students in advancing their own learning.

## A Test is a Test, Though... Right?

In the last decade, testing has become a pervasive, high-stakes component of children's and educators' lives, casting a lengthy shadow over the teaching and learning process. This shift has ratcheted up the pressures on children and their teachers from high school all the way down (though mandates end at the third grade). The question many educators ask is: Do we really want to extend the paradigm to pre-K through second grade? When viewing assessment through a summative lens, it is easy to see the danger or shortcomings of testing young children, which *Eager to Learn: Educating Our Preschoolers* succinctly describes.

**The first five years of life are a time of incredible growth and learning, but the course of development is uneven and sporadic. The status of a child's development as of any given day can change very rapidly. Consequently, assessment results—in particular, standardized test scores that reflect a given point in time—can easily misrepresent children's learning. (Bowman, Donovan, & Burns, 2001)**

However, formative assessment is much more about improving the circumstances of each child's learning than it is about sizing up children against their peers at a fixed date. The same dynamics that make young children hard to test summatively—incredible, uneven, sporadic, and rapid development—make a strong case for formative assessment's role in early childhood development, a point that *Eager to Learn* also makes.

**The importance of building new learning on prior knowledge, the episodic course of development in any given child, and the enormous variability among children in background and development all mean that assessment and instruction are inseparable parts of effective pedagogy. (Bowman et al., 2001)**

While summative assessments confine how students display their knowledge for comparative purposes, formative assessments try to find the optimal conditions for making visible a young child's understanding in order to enhance it. For early learners, the importance of drawing out their thinking cannot be overstated.

For example, Dr. Herb Ginsburg, a developmental psychologist who specializes in young children's mathematics learning, is creating a pre-K assessment that uses a situation familiar to most children—a birthday party—as its metaphor. Young children are often bashful around adults, lack the language skills to describe their thinking, and are prone to inconsistencies. Reliably assessing their learning, therefore, requires helping them to relax and using a motivating context that allows them to demonstrate their knowledge. Young children understand birthday parties (an activity many cultures share) and have expectations of games and prizes. In this context, a child can be asked to place three candles on a cake, to give square placemats to some kids and circle placemats to others, or place four lollipops on every plate. Students can also be asked to explain their actions. Ginsburg has successfully used this assessment method for early mathematics (number, shape, space, pattern, and measurement), including young children in different countries (Ginsburg, Choi, Lopez, Netley, & Chi, 1997). Others have used the method for early language assessment (Pena, Iglesias, & Lidz, 2001).

What are the components of good formative assessments, how can they aid instruction, and in what ways are they effective? This white paper addresses these questions.

## Assessment for Learning

We know much more now about the learning process than ever before, and this has helped to shed considerable light on the role of formative assessment in education. In *How People Learn: Brain, Mind, Experience, and School*, the National Research Council (NRC) describes how advances in the study of the mind have brought a new science of learning into focus, suggesting new ways of introducing students to traditional subjects, and fostering a deep understanding of important subject matter (Bransford, Brown, & Cocking, 2000). The NRC identified three key components of learning, discussed below.

### LEARNING WITH UNDERSTANDING

While factual knowledge is vital to knowledge-building, memorizing discrete facts alone is not sufficient. People need to understand the connections, implications, and concepts that underlie facts in ways that support the transfer of that knowledge to other contexts.

### PRE-EXISTING KNOWLEDGE

From birth, we are active learners who apply a particular point of view to our accumulation and assimilation of knowledge. Evidence suggests that teachers can enhance learning by recognizing students' prior knowledge and using this as a launching pad for instruction (Lehrer & Chazan, 1998; Schauble, Glaser, Duschl, Schulze, & John, 1995; Warren & Rosebery, 1996).

### ACTIVE LEARNING

Moving beyond rote memorization means that students must recognize when they understand as well as when they need more information. Known as "metacognition," even children as young as three are capable of describing how they solved a problem, and reflecting on what they know.

Formative assessments are particularly equipped to address these components of learning. Formative measures can probe student understanding deeply. To identify whether a concept has been fully understood, teachers can use a mix of questions and tasks to cover a key concept from different angles and to expose weaknesses in a student's understanding and ability to use key skills. To gauge how well students have acquired the sub-skills critical to realizing a larger curricular goal, teachers can use assessments that are targeted at those skills and have been designed to identify whether students are at risk for meeting long-term educational objectives. In addition, formative assessments not only support teachers in differentiating instruction because they focus on the individual learner, they also help students become aware of their strengths and weaknesses and take an active role in their learning.

In its follow-up report, *How People Learn: Bridging Research and Practice*, the NRC acknowledged the importance of formative assessment, identifying formative assessment as one of four essential components to the design of classroom environments optimized for learning (Donovan, Bransford, & Pellegrino, 2000). A number of researchers have underscored the importance of formative

assessment as a distinction between assessment *for* learning, where the design and use centers on promoting student learning, and assessment *of* learning, where the design and use serve the purposes of accountability, such as ranking or certification (Black, Harrison, Lee, Marshall & Wiliam, 2003; Stiggins & Chappuis, 2006; NCTM, 2007).

The recognition of the importance of formative assessment's role in student learning has corresponded with a similar recognition of the value of early childhood education. Pianta (2005) states clearly, "There is a new American primary school, and it starts at 3." Research has established the critical nature of effective development throughout the early childhood years (birth to 8 years old). For example, Cotton and Conklin (1989) found across numerous studies that preschool graduates had higher grades; fewer referrals for remediation, retention, or special education; greater academic motivation, on-task behavior, capacity for independent work, and time spent on homework; and higher future aspirations. A theme that emerged in their meta-analysis was that "good early experiences can set in motion a chain of events that pervades the child's life through high school and beyond, increasing the quality of his/her life experiences along the way."

## Reversing the Cycle of Remediation

Observing similar outcomes in studies of early intervention programs, Heckman and Masterov (2007) have identified investment in the preschooling of disadvantaged youth as producing larger economic and social returns and lower societal costs than later investments made in remedial adolescence education or adult job training. As they explain, "Early disadvantage, if left untreated, leads to academic and social difficulties in later years." Studies of early reading support this argument, noting that poor readers at the end of first grade rarely catch their grade-level peers (Lyon, Fletcher, Shaywitz, Shaywitz, Torgesen, Wood, Schulte, & Olson, 2001; National Reading Panel, 2000; Torgesen & Burgess, 1998). Identifying these readers early on and providing intensive instruction targeted at their needs significantly increases their chances of making progress toward reaching their peers and reading on grade level.

Research has consistently identified the instructional payoffs of classroom-based formative assessments. For example, in their meta-analysis of 250 studies, Black and Wiliam (1998) found that appropriate use of such assessments not only improved student learning of curricular material, but also raised students' scores on external achievement tests as well. Bursuck et al. (1994) found high-poverty kindergarten through second grade students who participated in a paper-based literacy assessment outperformed their peers with nearly twice as many students reaching benchmark status.

Despite evidence that formative assessment in the early years allows educators to identify student needs, enabling them to help students build skills and increase proficiency, few districts and states have any sort of systematic formative program for K-2. This environment creates a cycle

of remediation. High stakes assessments given in third grade become positioned as the driver of efforts to improve student learning rather than the beneficiary. This situation often leads to stopgap measures, such as the introduction of formative assessment systems that are only designed to support preparation for high-stakes exams. The focus shifts from expanding student learning to drilling missing skills. Embedding formative assessment processes in the pre-K through second grade years puts improving students' ability to learn first, positioning them to better perform on summative measures. High quality and appropriate formative assessment in grades K-2 have shown increases in the number of students who are proficient by third grade, meaning formative assessments improve the chances that more students will be successful on summative testing in third grade (Southard, Diefenbach, & Darandari, 2004).

Given the demands now placed on early childhood education, a need clearly exists for tools that can improve teaching and enhance learning. But these tools need to be attuned to the complex nature of early childhood learning. In early grades (pre-K to 3), assessments are often administered one-on-one and generally involve frequent progress monitoring of children who are at risk of not meeting benchmark. In both reading and mathematics, effective assessment of early learning has been shown to be critical to reversing failure in later years (Fuchs, Mock, Morgan, & Young, 2003). Intervening early in ways that enable teachers to carefully and systematically examine students' strengths and weaknesses is essential to establishing a solid foundation for the more cognitively demanding tasks students are required to perform in later years.

## Key Components of Formative Assessments

To highlight the distinct requirements of formative assessments, The Council of Chief State School Officers' (CCSSO) Formative Assessment for Students and Teachers (FAST) collaborative has crafted the following definition.

**Formative assessment is an intentional and systematic process used by teachers and students during instruction that provides feedback to adjust ongoing teaching and learning to improve students' achievement of intended instructional outcomes.**

It is worthwhile to unpack key points of emphasis in this definition. The authors describe formative assessment as an *intentional and systematic* process, meaning that formative measures should be an ongoing, integrated part of the classroom experience. They mention both teachers *and* students as users of these measures. Given that students are the primary stakeholders in the learning, they should be deeply engaged in the assessment and improvement of that process, a concept backed by research. The rest of the definition focuses on the need for assessments to provide information to teachers that allow them to modify and adjust instruction accordingly.

Over the past decade, a number of researchers have identified key components to appropriate, successful formative assessment (Black, 1998; Bransford et al., 2000; Donovan et al., 2000; Pellegrino, 2004; Partnership for 21st Century Skills, in press; Popham, 2006). In this section, we briefly summarize common characteristics found among their work.

**To be instructionally useful, formative assessment must be timely and ongoing.** Formative assessments are meant to provide feedback that can be used to improve teaching and learning. Students who are struggling are typically assessed more frequently because progress monitoring has been demonstrated to improve student outcomes. It follows, therefore, that such assessments must be used routinely throughout the school year so that instruction can be modified to improve learning outcomes.

**Formative assessments should be used to monitor student progress so that early intervention becomes a routine part of the learning process.** Assessing to guide student learning and testing for purposes of school accountability should be two distinct activities. Evaluating a student's performance against benchmarks, monitoring their progress, and inviting them into the assessment process create an opportunity for all students, but especially low achievers, to take a stake in their learning. Such assessments put the focus on the individual, providing a clear understanding of their problems and a path to improvement.

**Formative assessments should be learner-friendly.** Most major assessments serve audiences other than the learner. Feedback reaches all levels of the system, except the one that counts most—the student. Assessments should help students understand the teacher's learning intentions and what constitutes success, provide students with opportunities to revise and improve their thinking, and help students monitor their own progress over time. If we want reflective learners who take ownership in their own learning, then our students need to be involved in decision-making at an early age, such as viewing exemplary work to construct their own rubrics (Mindes, 2003; Stiggins & Chappuis, 2006).

**Formative assessments should distinguish between audiences.** Assessments should be easy to use and understand, which means that they should clearly focus on the intended audience: teachers, students, or both. For example, young children will lack the language to critically analyze their own performance, but they can understand indicators, such as progress bars and color codes. Such visual aids also provide teachers with a snapshot of students' strengths and weaknesses that can help them to effectively target their instruction.

**Control of formative assessment should reside as close to the classroom as possible.** If formative assessment should inform instruction and student learning, then it stands to reason that it must feel like a part of the classroom. Too often, educational leaders have treated the classroom as a black box with an eye toward the inputs and outputs and not the classroom experience (Black & Wiliam, 1998). If teachers are to make meaningful use of formative assessment data, then such

assessments must have direct relevance to their teaching and student learning. As Popham (2006) states, “The closer that formative assessments are to the actual instructional events taking place in the classrooms, the more likely will be their positive impact on student learning.”

**Formative assessments should make student thinking visible.** Formative assessments need to generate data that can be used to directly inform instructional practices, which means delving underneath factual knowledge to probe student’s understanding. Effective formative assessments reveal the background knowledge and the kinds of conceptual strategies a student uses to solve a problem. How students arrive at an answer is as important as the answer itself.

**Formative assessments should be built on solid cognitive, developmental, and educational research.** With the significant growth in our understanding of learning, formative measures should be based on current developmental, educational, and cognitive science research that provides a comprehensive view of how young children learn key concepts and skills (Bowman et al., 2001; Bransford, Brown, & Cocking, 2000). Assessments designed in this way help teachers ingrain research findings and ideas into their thinking as they interpret student behavior and develop an effective approach to instruction.

**Formative assessments should be valid and reliable.** Without the right evidence, teachers and students cannot chart an accurate course for improvement. Formative measures, like all other assessments, need the right mix of questions to engage student understanding from multiple angles. The instruments need to not only develop a more complete picture of how deeply the student understands the material, but also highlight student misunderstandings in ways that reveal instructional pathways. As the NRC’s *Eager to Learn* report states: “Assessment involves theorizing—having informed ideas about the processes of learning and developing hypotheses about a child’s strengths and deficits on the basis of assessment information.”

## Using Technology to Support Formative Assessment

Whether assessments are formative or summative, they generate a lot of data. Running through a battery of phonemics questions every other week for 24 students over four months can yield valuable insights into individual needs, but the data must be analyzed to be useful. Research suggests that the most profound affordance of technology in education is the ability to embed assessment strategies into the learning process and support teachers and students in using assessment information to shape instructional practice (Brunner & Honey, 2001; Hupert et al., 2004; Sharp & Risko, 2003; Pellegrino, 2004). Enabling teachers to capture assessment data electronically saves significant time over traditional means, both opening up class time and encouraging the use of assessments. The teacher now has access to the data immediately. The data can be presented in a format conducive for analysis and tracking trends over time. This formatting can also make sharing results with the students—those with the most at stake—easier and more instructionally relevant.

**The most salient feature about technology is that it is a means to an end; it provides tools to support the creation and enactment of more powerful learning environments.** (Pellegrino, 2004)

Technology cannot make up for a poorly designed assessment, but when coupled with valid and reliable measures that have been built on a solid foundation of research, it can streamline the collection and support the analysis process, freeing the teacher and student to make sense of and act on the information. This strategy places assessment squarely in the center of the classroom, where it is most likely to make a difference in students' lives.

For example, a teacher may use a handheld computer to administer a literacy screening of skills that are strong indicators of whether young students will become fluent and purposeful readers as they mature. The assessment—a series of timed tasks that vary depending on grade level—is administered three times per year, requiring a few minutes per child. Using handheld computers, teachers can immediately view the results in different graphic forms. With each administration, they can chart a student's progress over time.

In such scenarios, researchers have reported that teachers recognized weaknesses in their understanding of particular aspects of literacy instruction (through identifying common persistent challenges in their students' performance), enabling them to request specific professional development support in areas addressing those instructional weaknesses (Hupert & Heinze, 2006). Hupert and Heinze also found that teachers use the data with parents in conferences, often provoking "a longer, more involved discussion with parents not only about the child's progress, but also about strategies and supports that parents can offer at home." They found teachers also communicate with students directly about their progress, particularly when doing progress monitoring. In some cases, students began asking to test themselves to see if they had improved in areas where they were weak. In short, technology can help both teachers and students take ownership of the data.

For example, New Mexico has used Wireless Generation's mCLASS® handheld computer-based administration of the The Dynamic Indicators of Basic Early Literacy Skills (DIBELS®) assessment throughout its school system for several years, as part of the Reading First initiative. DIBELS are a set of standardized, individually administered measures of early literacy development designed to regularly monitor the development of pre-reading and early reading skills (University of Oregon Center on Teaching and Learning, 2007). Education Week recently reported on teacher use of the handheld to support instruction (Olsen, 2007). During mid-year assessments, first-grade teachers discovered that most children were struggling with oral fluency, so they added a fluency intervention program during the afternoon called "Reading Naturally" and began closely progress monitoring students' oral fluency.

In the fall of 2004, when the program began, 29 percent of kindergartners in the district were reading at the intensive level and 28 percent at the benchmark level on the DIBELS benchmark assessments. By this winter, only 2 percent of kindergartners performed at the intensive level, while 93 percent read at the benchmark level. About 70 percent of 1st and 2nd graders now read at the benchmark level on the assessments. (Education Week, May 2, 2007)

## The Effectiveness of Formative Assessment

Research on the effects of using formative assessments in the classroom shows a powerful effect on student achievement (effect sizes ranging from 0.40 to 1.76). The effect is attributed to teacher ability to monitor what students know and how they understand it; to the specific types of feedback that teachers provide to students based on their performance; and to the specific actions that teachers take to respond to student results and the supports that they have in place to do so. Specific examples of studies and meta-analyses that point to the effectiveness of formative assessment follow.

In their analysis of 250 formative assessment studies, Black and William (1998a, 1998b) found a lasting, positive effect on both the quality of teaching and the achievement of students, with gains frequently more substantial for low-performing students.

Fuchs and Fuchs (1986) examined 21 controlled studies about the effects of frequent formative evaluation on the achievement of students in preschool through Grade 12. In these studies, teachers conducted formative assessments between two and five times per week. The average effect size was 0.70 standard deviations for classrooms that used student data to draw progress reports on each student and to adjust instruction, and the average effect size was 0.26 for classrooms that used formative assessments but did not systematically organize the resulting data.

Meisels, et al. (2003) examined changes in reading and math performance from Grade 3 to Grade 4 on the Iowa Test of Basic Skills for students in classrooms using a performance-based assessment of reading, math, and other academic skills, compared to similar students in classrooms that did not use the assessment. The students, who were primarily low-SES and African-American, were enrolled in classrooms that used the assessment for three years before the study. The results showed an impressive gain for students whose teachers used the assessment. Between Grades 3 and 4, students who used the assessment improved their performance by 27 points in reading and 20 points in math, compared to changes of 0 and 6 points for students in the comparison schools, yielding effect sizes of 1.6 in reading and 0.76 in math.

Bursuck, et al. (2004) conducted a three-year evaluation of Project PRIDE, in which teachers administered the paper DIBELS assessment every two to four weeks with high-poverty students

in Kindergarten through Grade 2 in three urban schools. Each year, the first DIBELS assessment was used to place students into one of three instructional groups receiving a targeted form of explicit instruction in phonemics, phonemic awareness, reading fluency, vocabulary, and reading comprehension. Subsequent assessments were used to evaluate and adjust these placements. Overall, the Project PRIDE students outperformed the control group, with almost twice as many students in the advanced benchmark group in Project PRIDE schools.

Studies of curriculum-based measurement (e.g., Fuchs, et al., 1994; Fuchs, et al., 1992; Fuchs, Fuchs, & Hamlett, 1989a & 1989b) examine the effects of administering weekly or biweekly assessments in reading, math, and spelling, and receiving computer-generated graphs of student progress together with instructional recommendations. Taken together, these studies demonstrate that students in classrooms receiving graphical progress reports and instructional recommendations improved more quickly and achieved higher outcomes, compared to both students in classrooms without instructional recommendations and students in a control group. Teachers using the assessment, reports, and instructional recommendations recounted addressing more skills, providing more one-on-one instruction, and facilitating more peer-to-peer instruction.

Bergan, et al. (1991) evaluated an 8-week implementation of an assessment and instructional planning system for 838 high-poverty kindergarten students. The assessments required students to demonstrate mastery of increasingly difficult tasks in math, reading, and science. Teachers administered the assessments every two weeks and consulted with a researcher to interpret the results and plan instruction. Even in this short time period, use of the assessment dramatically lowered special education referral and placement. One of every 17 students in the experimental group was referred to special education, and one of 71 was placed. In the control group, one of every 3.7 students was referred, and one of 5 was placed.

A study examining the impact of progress monitoring to assess K-3 students' literacy skills found, across a sample of 200,000 students, that the frequency of progress monitoring has a positive impact on student outcomes (Hupert, Heinze, Gunn, & Stewart, in press). Where fewer progress monitoring administrations took place, smaller effect sizes were observed. Where larger numbers of progress monitoring administrations took place, greater effect sizes were seen. In the infrequent progress monitoring condition (averaging 3 assessments per year), small to moderate effect sizes were observed, with the strongest effect sizes observed in kindergarten (ranging from 0.26 to 0.71). In the frequent conditions (averaging 11 assessments per year), moderate to large effect sizes were observed, with the strongest effects being observed in kindergarten and first grade (ranging from 0.40 to 1.25).

## All Children Can Learn

As we begin to take closer aim at applying our deeper understanding of learning to our classroom practice, it is clear that we need tools to address learning as understanding, build on students' pre-existing knowledge, and engage students actively as learners in the learning process. Formative assessment holds tremendous power for bringing the learning process back into focus by allowing teacher and student to dig in, take ownership of their teaching and learning respectively, and lay the foundation for ongoing educational success and achievement. In this respect, formative assessment has perhaps the most to give at the time when learning is most explosive and unwieldy: early childhood.

Formative assessment is not a magic bullet, but it can make a key contribution in identifying what students know, illuminating a course for improvement, and inviting them in as stakeholders in learning. Research clearly indicates that when used routinely in the early grades, formative early childhood assessment systems increase the likelihood that all children will be successful learners in the early years and beyond. Regular assessment and appropriate instructional intervention can help decrease the disparities found among young children as a result of differing economic and social/emotional supports available to them in the early years (ECEA, 2007).

Today, shoelaces; tomorrow, astrophysics. Where the course of a student's learning may take them, we cannot predict. But when we can think of them as individuals and we can put them on the path as learners, our foothold in Jane's early education becomes a stake in her future.

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Wireless Generation pioneered the adaptation of mobile technologies, including handheld computers and digital pens, for use in managing and improving teaching and learning in grades pre-K-6. The company's commitment to listening to educators and gaining a deep understanding of their challenges has led to the development of offerings that optimally combine mobile tools, Internet technology, and in-person services to help improve student achievement in reading and math. Wireless Generation's mCLASS products and services streamline collection of data about student learning needs and school operations, facilitate data analysis and interpretation, and build educators' capacity to implement data-driven instructional programs that deliver better outcomes for children. State and district school systems across the country and overseas now rely upon these offerings to achieve and sustain growth in their classrooms. More information is available on the Web at [www.wirelessgeneration.com](http://www.wirelessgeneration.com).

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