Assessment to Inform Instruction: Formative Assessment

Global Reading Network Critical Topics Series

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Acknowledgments

List of Acronyms

ASER   Annual Status of Education Report

EGR   Early Grade Reading

EGRA   Early Grade Reading Assessment

GRN   Global Reading Network

TaRL   Teaching at the Right Level

URC   University Research Co., LLC

USAID   United States Agency for International Development

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Purpose of the Paper

Our goal in this paper is to provide an overview of assessment *for* learning, commonly called formative assessment. Among several different types of assessment, formative assessment most directly informs instructional practice. Conducted correctly, formative assessment is an essential element in effective primary grade reading instruction.

Our paper begins with a review of key aspects about formative assessment relevant to literacy development, including types of formative assessment, their links to the instructional decision cycle, and requisite features of quality formative assessment. We then present specific guidance and information for successfully implementing formative assessment as part of effective literacy instruction.

What is Assessment?

Assessment is the systematic collection, analysis, and interpretation and evaluation of information. In educational contexts, assessment is conducted to learn and interpret learning patterns and achievement levels of students, and typically includes testing, although other forms of assessment such as interview and observation are also important tools.

Overview of Formative Assessment

What Is Formative Assessment?

Formative assessment is gathering information about students' performance **for the purpose of improving teaching or learning**.[1] Formative assessment is assessment for learning, not of learning.

In many contexts, teachers, families and students may be more familiar with assessment of learning. This is often called summative assessment. This type of assessment provides the teacher and the larger system with data on how much skill or content knowledge a student knows at a specific time (e.g., end of semester or year), and enables his/her teachers and the system to evaluate his/her performance against standards, expectations or the performance of his/her peers.

In this paper, we focus on formative assessment, or assessment *for* learning. Assessment for learning is when assessments are structured to allow teachers to gather evidence about students' learning needs in order to help them appropriately modify and change instructional methods. In order to be formative, assessment must be **connected to the instructional process** and the way in which skills and material are taught. Formative assessment should focus specifically on gathering the types of evidence that inform whether students have mastered the skills that have been recently taught, and the extent to which the teacher's chosen instructional approach has benefited student learning.

Sometimes, assessment tasks can be used either for the assessment *of* learning, (i.e., summative assessment), or for the purpose of assessment *for* learning (formative assessment). **Table 1** provides examples.

Table 1. Examples of Assessment of Learning (Summative) and for Learning (Formative)

Assessment Task	*Of* Learning (Summative)	*For* Learning (Formative)
Fluency Assessment — The student is asked to read aloud connected texts to check accuracy and speed.	Conducted using early grade reading assessment (EGRA) or other standardized assessments to inform about a student's performance compared to fluency norms, or to provide data for larger program evaluation.	Conducted regularly by the teacher, using EGRA or other developmentally appropriate texts, to determine whether the student is making adequate progress in reading fluency. If not, the teacher would implement instructional approaches to address the need (e.g., further decoding instruction or repeated timed reading).
Comprehension assessment — Comprehension questions are asked after reading texts to determine student understanding of the text.	Conducted using EGRA or other standardized assessments to evaluate the student's comprehension ability compared to peers or expectations, or to provide data for larger program evaluation.	Conducted on a regular basis to determine if the student is able to comprehend what was read, and to assist the teacher to determine instructional needs (e.g., teaching how to revisit the text during instruction if needed).

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[1] Lorrie Shepard, Karen Hammerness, Linda Darling-Hammond, and Frances Rust, "Assessment," in *Preparing Teachers for a Changing World: What Teachers Should Learn and Be Able to Do,* ed. Linda Darling-Hammond and John Bransford (San Francisco, CA: Jossey-Bass, 2005), 275–326.

Formative Assessment and the Instructional Decision Cycle

For anyone who has spent any time in the classroom, it is clear that children vary largely in their strengths and weaknesses, and therefore, identical instruction for all children can leave some children with unmet needs or can sacrifice potential instructional opportunities. What may be less apparent to the casual observer is the indelible bond and symbiotic relation in effective instruction between the **theory** of what is to be taught (i.e., the content or scope and sequence of a formal curriculum), the **assessment** of students' skills and the **instruction** provided by a teacher.

Assessment is one of the three elements necessary for successful instruction[2] (see **Figure 1**). In the figure, we find theory, instruction and assessment. Theory is a system of organized ideas and principles that explains a target construct or skill (e.g., reading), and undergoes rigorous empirical studies. Instruction and assessment are guided by existing theory about which skills (e.g., phonological awareness, alphabet letters, vocabulary) to teach and assess. However, instruction is also based on assessment results which offer information about how students are doing in the theoretically important areas (e.g., phonological awareness). The two-way arrows in the model show the dynamic relation between the three components. A child's classroom experience is a result of how the teacher uses information from assessment to shape the ways in which he/she employs his/her knowledge and skills to teach the skills specified in theory.

The practitioner who understands this dynamic, tri-partite relationship will easily understand how formative assessment, to be effective, must be intimately linked to teachers' decision-making processes. When properly used, formative assessment can be an essential tool for teachers as they work to interpret and "bring to life" the instructions provided to them in their national curriculum, teachers' guides, lessons or student texts for a wide variety of students.

Figure 1. Relation between Theory, Assessment and Instruction in Effective Teaching
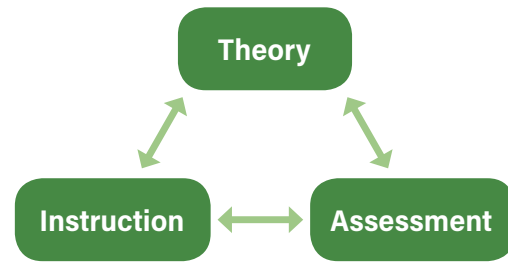
Figure 2 below illustrates how one type of formative assessment, "screening" (see the next section for more details) links in a circular fashion to a teacher's decisions about differentiating instruction, which then, once implemented, feed his/her choices about further monitoring students' progress.

As this figure shows, based on information from screening, teachers make decisions about the strengths and weaknesses of students, and their instructional grouping. Teachers then plan and deliver instruction to address students' learning needs, and then check again on students' progress, to assess for the purpose of even better tailoring their teaching to students' needs.

Figure 2. Data-Based Instructional Decision-Making Cycle

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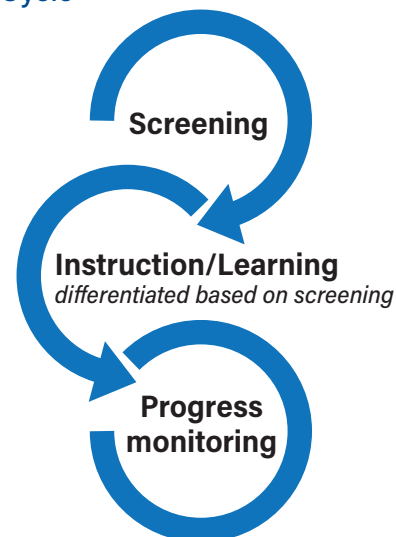
[2] e.g., Andrea Martone and Stephen G. Sireci, "Evaluating Alignment between Curriculum, Assessment and Instruction," *Review of Educational Research,* 79 (2009).

A Practical Example: Learning to Ride a Bicycle

One good simple example of how theory, assessment and instruction must constantly interact with one another is the process of learning to ride a bicycle. We do not teach children to ride a bicycle by providing a desk-lesson, with a graphic organizer, and then administering an exam. Instead, we introduce the process and theory of riding a bike in a simple way, then put the child on the bicycle, supporting them as they begin to try riding. As they move forward, we watch carefully to see what is going wrong—essentially conducting formative assessment. Are their feet able to reach the pedals, do they understand the combined process of pedaling and steering, moving fast enough to keep from tipping over, and are they able to keep their balance? As soon as we see any of these problems, we provide immediate feedback—brief, practical and to the point—new instruction. Then we send them on their way again, supporting them from behind as they move forward.

In this example, we can see how we introduce the process and concept of the skill in a developmentally appropriate way, gather continuous assessment data throughout and immediately respond by providing adapted instruction. It is in this way that all learners master practical skills, and it is important to remember that all learning skills should be viewed as practical skills to be applied in real world settings.

This process constitutes "data-based decision-making," which is the use of valid, reliable assessment data to determine what and how to teach. Teachers gather and interpret data to intentionally plan and modify instruction, identifying students who need supplemental instructional support, determining the type of support they need, and identifying strategies to meet those needs.

When it is most effective, data-based decision-making functions as an ongoing, repeated cycle, fueled by the results of formative assessments. Teachers continue to modify and adjust groupings and instruction, and become ever-better informed by routinely gathering information (progress monitoring assessment) for each subgroup of students. If formative assessment results demonstrate that any group of students is failing to make progress despite adequate instruction, teachers can plan for more intensive instruction.[3,4]

Consider, for example, a beginning reading class. Some students may have advanced knowledge of alphabet letters. Other students may have little knowledge of letters and need explicit and systematic instruction. With proper formative assessment, the teacher can group children who have advanced knowledge together, and those with weak knowledge together, and then can provide instruction to each group based on their needs.

Evidence for the Use of Formative Assessment

Evidence indicates that when teachers use formative assessments effectively, student outcomes improve, and this is consistent regardless of students' grade and learning disability status.[5,6] In addition, feedback based on formative assessment data has been

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[3] Matthew K. Burns, Sandra M. Pulles, Lori Helman, and Jennifer McComas, "Assessment-Based Intervention Frameworks: An Example of a Tier 1 Reading Intervention in an Urban School," in *Psychoeducational Assessment and Intervention for Ethnic Minority Children: Evidence-Based Approaches,* ed. Scott Lee Graves and Jamilia J. Blake (Washington, DC: American Psychological Association, 2016), 165-182.

[4] Lynn S. Fuchs and Douglas Fuchs, "Introduction to Response to Intervention: What, Why, and How Valid Is It?" *Reading Research Quarterly,* 41, no. 1 (2006).

[5] e.g., Paul Black and Dylan William, "Inside the Black Box: Raising Standards through Classroom Assessment," *Phi Delta Kappan, October* (1998).

[6] Lynn S. Fuchs and Douglas Fuchs, "Effects of Systematic Formative Evaluation: A Meta-Analysis," *Exceptional Children,* 53, (1986).

Formative Assessment and Structured Pedagogy: The Intersection

The ultimate goal of formative assessment is to create instructional opportunities that meet varying students' needs (i.e., differentiated instruction). Therefore, the first step in effective instruction is an accurate identification of students' needs using assessment to make instructional decisions. Formative assessment is one of the key principles of structured pedagogy—an instructional framework to promote student learning, employing several key principles based on empirical evidence (e.g., explicit and systematic instruction, scaffolding, etc.) When teachers are armed with specific data concerning students' learning gains and continued needs, they are better able to target the content and skills precisely, improving the quality of their instruction and better meeting the needs of individual students. For more information on structured pedagogy, see *Promoting Successful Literacy Acquisition through Structured Pedagogy.*[7]

Examples of Differentiated Instruction

1. Providing small group instruction based on students' needs (e.g., students who are struggling to master letter/sound associations when compared to the larger class).

2. Providing additional practice opportunities for students who are struggling.

3. Providing more advanced content and problem sets for students who are ready to be accelerated in their reading.

4. Providing written direction or visual reminders for students who are deaf or hard of hearing, or providing individualized direction for a student who needs additional support.

5. Providing psychosocial support to a student who has experienced trauma severe enough to impact his/her ability to learn.

shown to improve student learning,[8] particularly when feedback was on a specific task and on the process of completing a task more effectively.

A review of studies found an impressively large effect (effect size = .70) in student learning when teachers used formative assessment for the purpose of monitoring student progress in a target skill. The effect was stronger when teachers followed explicit and systematic rules in evaluating the data rather than using their own judgment.[9]

As stated above, the goal of formative assessment is to provide instruction that meets students' learning needs—differentiated instruction. Evidence is clear that differentiated instruction informed by assessment results has a significant effect on student learning. For instance, students who received differentiated instruction based on assessment information outperformed those who did not, and the effects were stronger when students received sustained differentiated instruction in multiple years.[10] Concrete examples of differentiated instruction can be found above.

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[7] Young-Suk Grace Kim and Marcia Davidson, *Promoting Successful Literacy Acquisition through Structured Pedagogy,* (Washington, DC: USAID, 2019).

[8] John Hattie and Helen Timperley, "The Power of Feedback," *Review of Educational Research,* 77 (2007).

[9] Fuchs and Fuchs, "Effects of Systematic Formative Evaluation: A Meta-Analysis."

[10] Carol McDonald Connor et al., "A Longitudinal Cluster-Randomized Controlled Study on the Accumulating Effects of Individualized Literacy Instruction on Students' Reading from First through Third Grade," *Psychological Science,* 24 (2013).

Types of Formative Assessment

There are multiple types of formative assessment. **Table 2** summarizes four of them. Each is then explained in greater detail.

In many contexts, teachers, families and students may be more familiar with assessment of learning. This is often called summative assessment. This type of assessment provides the teacher and the larger system with data on how much skill or content knowledge a student knows at a specific time (e.g., end of semester or year), and enables his/her teachers and the system to evaluate his/her performance against standards, expectations or the performance of his/her peers.

In order to systematically gather information about students' needs, the following four types of complimentary formative assessment can be used.

Screening: The goal is to develop an initial, overall picture about students' levels on key target skills (e.g., alphabet sound knowledge) and to identify students who may need further detailed assessment to determine sources of their weaknesses (called diagnostic assessment) identified in the screening

assessment. Screening typically includes brief assessment of key skills at the beginning of the year for all students. For example, teachers may screen to determine students' letter knowledge (knowledge of names and sounds) at the beginning of Year 1, to determine how to proceed with instruction.

Monitoring of Mastery Learning: The goal is to measure students' learning of content taught that day. Mastery monitoring helps teachers track student progress on a daily basis and gives an opportunity to provide feedback and reteach in the moment. Mastery monitoring assessment can include observations, questioning, exercises and quizzes.[11] Mastery learning assessment tasks should be integrated into curriculum materials and lesson plans to guide the teacher on how often and how to conduct these assessments. For example, a teacher may measure students' ability to use specific letter(s) taught in that day's lesson.

Progress Monitoring: The goal is to closely keep track of progress in key skills for students who have not met instructional goals. Progress monitoring data provide the teacher information on students' progress toward grade level goals—whether students are catching up or falling behind and whether they will

Table 2. Four Types of Formative Assessments

Formative Assessment Type	Goal	When	Who
Screening	To screen students for potential needs for further assessment or intervention	Beginning of the school year or the term	All students
Monitoring of Mastery Learning	To measure student learning of content taught that day	Daily (in the context of instruction)	All students
Progress Monitoring	To monitor whether students are making adequate progress	Throughout the year, every week or every 2 to 4 weeks, depending on the needs	Students who have not met instructional goals
Benchmark Assessment	To evaluate whether students meet target performance level	Mid and/or end of year	All students

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[11] Lindsey Perry, "Review of Formative Assessment Use and Training in Africa," *International Journal of School and Educational Psychology,* 1 (2013).

need more support (more intensive instruction) to meet end of year goals. It is administered throughout the year. For example, a teacher may monitor the students' knowledge of letters taught during a specific period (e.g., every week or two weeks).

Benchmark Assessment: The goal is to gauge whether students' performance meets the expected targeted level (or benchmark) at a certain critical point (trimester, or mid- and end of year). Benchmarks are levels of performance to mark student progress toward a predetermined goal. For example, can the students identify the names and sounds of alphabet letters that are expected to be learned by the middle of Year 1 (e.g., 17 letters) to ensure their successful reading development?

Data from these assessments can be used to:

1. Establish student achievement status—whether students are no risk, low risk or high risk for difficulties in reading skills,

2. Plan instruction to address student needs, and

3. Group students for instruction or regroup as necessary.

Conducting High–Quality Formative Assessment in Reading

Formative assessments come in a variety of forms. Many times they are integrated into lessons and curriculum materials provided to teachers. Teachers can also design the formative assessments themselves with sufficient training and understanding.

For formative assessments to be effective, they must demonstrate at least the following four prerequisite features:

(a) They must provide *reliable and valid* information.

(b) They must measure relevant reading skills.

(c) They must be based on information about learning progression and benchmarks.

(d) The stakeholders in the assessment must have the knowledge and capacity to use formative assessment measures.

We address each of these requirements for effective formative assessment in reading below.

Designing Assessments That Provide Reliable and Valid Information

To best inform instruction, formative assessments should provide reliable and valid information. Let's consider each of these.

"Reliable" can be understood, in this context, as a synonym for "consistent." For example, if a student is assessed on the same assessment two times a few days apart, the student's score on both tests should be highly similar. Tests that provide inconsistent results are not reliable and, therefore, we cannot be confident of the results. This does not mean that teachers have to assess children twice. What this means for classroom teachers is that they need

to look out for information on reliability when assessments are available to them (e.g., EGRA). If a teacher is designing his/her own formative assessments based on a certain curriculum or scope and sequence, evaluating reliability of created assessments is not typically practical as it requires technical knowledge about psychometrics (i.e., different types of reliability evidence are needed depending on the nature of the assessments). Teachers have to be mindful, however, about the consistency of the nature of items included in their assessment as well as consistency in their scoring.

Formative assessments should also be "valid." A valid assessment measures the content it is intended to measure, and it is also used for the exact purpose of measuring that content. For example, if the goal of an assessment is to measure students' letter knowledge, the content should include items that measure students' letter knowledge, not unrelated content.

In order to be considered valid, some formative assessments, such as screening and benchmarking, should have a clear link to summative assessments. This link should be evident through the ability of those screening or benchmarking assessments to *predict* a students' performance on an eventual summative assessment. Students who do well in screening assessments at the beginning of the year or meet the target performance level in benchmark assessment during the year should also do well at the end of the year on a summative assessment of reading, if those screening and benchmark assessments were valid (i.e., predictive validity).

While this systematic approach is ideal and necessary, it can be difficult in a developing context and may be beyond the teacher's control. Teachers may not have access to widely available assessment tools with psychometric evidence (i.e., reliability and valid-

ity). In addition, they may not have the background knowledge necessary to develop these assessments. Finally, there may be competing policies or initiatives that make it difficult for them to meet this standard for assessment.

Although this sounds daunting, even if teachers only have limited knowledge, access or time, they can still conduct formative assessment on a regular basis. The most important first understanding for teachers is that all activities and products in a classroom provide a wealth of evidence from which to make decisions about instructional next steps. Secondly, assessment opportunities can be provided by ensuring that the materials teachers have for instruction, though possibly limited, have assessment tasks that are keyed to critical student competencies. Finally, including basic formative assessment training in teacher pre-service and in-service training will put teachers on the path to integrating assessment as a regular part of their instruction (see below). The Inter-agency Network for Education in Emergencies (INEE) offers additional standards for assessing learning outcomes using a code of ethics that ensures that tests do not increase fear or cause distress. Those resources can be found at: *https://inee.org/standards/domain-3-teaching-and-learning*.

Measuring Relevant Reading Skills

R esearch in the last four decades has identified key skills that ensure successful reading, and has shown a developmental learning progression of these skills (see the links between theory with instruction and assessment in **Figure 1** earlier).[12,13] This progression is at the heart of the creation of all effective formative assessments in reading.

Formative Assessment Tools in Reading

Many reading tests (e.g., EGRA, ASER) have been developed and used in developing countries in the last decade. Early Grade Reading Assessment (EGRA) is one such an example that has been developed and used widely in over 100 countries. Typical EGRA includes key skills noted above such as phonological awareness, letter knowledge, word reading (or nonword reading), text reading fluency and reading comprehension, and recent efforts include oral language skills. In addition to using the EGRA for programmatic and systems data collection, some components of the EGRA can be adapted for formative use in the classroom. That is, sub-tests of EGRA, the Annual Status of Education Report (ASER) or other tools can be used for screening and monitoring purposes to inform instruction[14] as long as these assessments meet the foundational quality features for the intended population of students (see the Requisites for Formative Assessments on the following section). That is, results from these assessment tools should be used to inform instructional decisions and to plan and adjust instruction. Other reading assessments such as ASER can also be used for such purposes. Note that more frequent administration of assessment components from EGRA or ASER (or other tools) alone is not formative assessment. Instead, assessment results should be linked to instructional decision making. In other words, data should be collected for a clear formative purpose, and in turn, should use appropriate methods (in terms of students, content, timing) to meet that purpose.

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12 Young-Suk Grace Kim, Helen N. Boyle, Stephanie S. Zuilkowski, and Pooja Nakamura, *The Landscape Report on Early Grade Literacy,* (Washington, DC: USAID, 2016).

13 National Institute of Child Health and Human Development, *Report of the National Reading Panel. Teaching Children to Read: An Evidence-Based Assessment of The Scientific Research Literature on Reading and its Implications for Reading Instruction,* (Washington, DC: National Reading Panel, 2000).

14 Margaret M. Dubeck and Amber Gove, "The Early Grade Reading Assessment (EGRA): Its Theoretical Foundation, Purpose, and Limitations," *International Journal of Educational Development,* 40, (2015).

In reading, phonological awareness and knowledge of orthographic symbols (e.g., shapes, names and sounds of alphabet letters) are emergent literacy skills that are foundational for word reading. Therefore, they should be assessed and taught during the beginning stage of reading development. Likewise, it is important to begin early on to address oral language skills and comprehension, even when students have limited ability to read text and demonstrate comprehension.

As the developmental progression indicates, with time, word reading, text reading fluency and reading comprehension should be assessed for all students, while phonological awareness and letter knowledge continue to be assessed for those who struggle. As mentioned above, oral language, which includes both oral vocabulary and listening comprehension, should be taught and assessed throughout, as it is a key skill for reading comprehension and takes a prolonged time to develop (see **Table 3**).[15] Note that many of these skills are measured in oral mode—students read aloud given words or texts. This is helpful and necessary, particularly for beginning readers, so that teachers can gather accurate information about what students do well or do not do well.

Although overall developmental progression in reading is similar across languages, how fast these skills develop and, consequently, when they should be assessed varies across languages and contexts. Therefore, the timeline here is an illustrative guideline and should be adjusted depending on the language and contexts. For instance, in languages where letter-sound correspondences are inconsistent (e.g., English, French), even with explicit and systematic instruction, learning to decode takes longer than in languages where letter-sound correspondences are consistent (e.g., Spanish, Kiswahili)).[16] For example, in Spanish, when taught well, decoding skill can be acquired within a year of instruction. In English, learning to decode typically takes 2-3 years, and therefore, students' word reading skills may be assessed for a more prolonged time than in Spanish.

Another contextual factor to consider is the language of instruction. For example, if literacy instruction is in a language that is not familiar to children, the development of some literacy skills may occur later than noted in **Table 3**, and the assessment schedule in the second language may be altered. Similarly, in multilingual contexts where students are expected to read in more than one language (e.g., bilingual programs or transition from L1 to L2), reading assessment will occur in all the target languages.

Table 3. Key Areas of Assessment and Instruction in Early Grade Reading

Year	Phonological Awareness	Knowledge of Orthographic Symbols	Word Reading	Text Reading Fluency	Reading Comprehension	Oral and Expressive Language (Vocabulary and Comprehension of Speech or Sign)
Year 1	√	√	√			√
Year 2			√	√	√	√
Year 3			√	√	√	√

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[15] see Kim et al., *The Landscape Report on Early Grade Literacy* for further details.

[16] Philip H.K. Seymour, Mikko Aro, and Jane M. Erskine, "Foundation Literacy Acquisition in European Orthographies," *British Journal of Psychology,* 94 (2003).

Basing Assessments on Benchmarks

Benchmarks are relatively short-term goals within each subskill. They are often only established for end-of-year, but mid-year benchmarks or trimester benchmarks that are clearly explained to teachers are highly beneficial for formative assessment purposes.

For a teacher to make instructional decisions based on assessment data, benchmarks in each key skill should be identified and articulated by the national education agency based on empirical evidence. When benchmarks have been established, teachers can then conduct benchmark assessments at critical time points during the academic year to ensure that students are on an expected learning trajectory for successful reading acquisition.

For example, let's say that a target benchmark score for letter sound knowledge at first trimester is accurately identifying 18 letters aloud in one minute. If some students do not meet this benchmark at the end of the first trimester, the teacher would plan instruction targeting letter sounds for this group of students. Students who had met the benchmark would focus on different learning tasks. In this way, instruction would be differentiated to take into account the different levels of the two groups.

Benchmarks need to be reasonable, feasible, and context-specific, as they vary by language and contexts. Benchmarks also should be based on scientific evidence—data on how typical children develop in a target skill and how a particular benchmark score precisely predicts later reading success. This can be challenging in contexts where student schooling may be intermittent or attendance a large issue. In this kind of setting, benchmarks may be based on the expected performance of students with optimal access to reading instruction, and the targets for how many students will meet this benchmark should be adjusted accordingly.

Building Stakeholder Capacity

In many contexts around the world, one of the greatest barriers to effective use of formative assessment data is lack of stakeholders' professional knowledge on assessment.[17] Obviously, if the purpose of formative assessment is to inform instruction, then teachers need to know how to draw accurate conclusions from assessment results and to link them to appropriate instructional strategies. Recent research confirms teachers' role as *agents* of instruction, and advocates for them to be trained about how to collect, interpret and use data to make instructional decisions.[18] The ability to successfully respond to the different learning needs of children (through grouping and other strategies), teachers' content knowledge, pedagogical knowledge, and technological knowledge must all be sufficiently well-developed through teacher training and job-embedded coaching. Additional resources from the Global Reading Network that address these teacher professional development needs include:

- *Landscape Report on Early Grade Literacy*

- *Toward the Design and Implementation of Comprehensive Primary Grade Literacy and Numeracy Programs*

- *Promoting Successful Literacy Acquisition through Structured Pedagogy*

- *Coaching in Early Grade Reading Programs: Evidence, Experiences and Recommendations*

- *Literacy for All Toolkit*

- *INEE Minimum Standards Handbook (website= https://inee.org/standards).*

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[17] Susan M. Brookhart, "Using Assessment to Improve Education in Developing Nations," in *Improving Education through Assessment, Innovation, and Evaluation,* ed. Henry Braun, Anil Kanjee, Eric Bettinger, and Michael Kremer (Cambridge, MA: American Academy of Arts, 2011).

[18] Lisbeth M. Brevik, Marte Blikstad-Balas, and Kirsti Lyngvær Engelien, "Integrating Assessment for Learning in the Teacher Education Programme at the University of Oslo," *Assessment in Education: Principles, Policy, & Practice,* 24, (2017).

Pre-service or in-service training and curriculum should include formative assessment.[19] Beyond preservice and in-service teacher training, other creative approaches can be explored, including teachers working together by grade level or teacher study groups. Teacher training in formative assessment should focus on the specifics of implementing formative assessment in the classroom. In particular, the Center for Educational Research and Innovation[20] identified the following six elements of formative assessment implementation in which teachers need explicit professional development:

1. Establishment of a classroom culture that encourages interaction and the use of assessment tools.

2. Establishment of learning goals, and tracking of individual student progress toward those goals.

3. Use of varied instructional methods to meet diverse student needs.[21,22]

4. Use of varied approaches to assessing student understanding.

5. Feedback on student performance and adaptation of instruction to meet identified needs.

6. Active involvement of students in the learning process so that students are aware of and regulate their own learning process (e.g., setting goals, evaluating their learning process).

One important finding from research is that, although teachers are a critically important stakeholder in the formative evaluation process, there is actually a wider array of educational stakeholders that should be assessment literat.[23] These include personnel in the Ministry of Education and school districts, as well as literacy coaches. All of these professionals should have adequate knowledge about the assessment system in relation to instruction,[24] as well as knowledge about reading development, developmental progression, pedagogical approaches and benchmarks to guide their assessment and instruction.[25] In contexts where formative assessment in reading instruction has not been implemented as described in this brief, a landscape analysis of what assessment traditions and practices in reading do exist would be a place to start for the development of capacity building for this broad range of stakeholders. The more teachers, educational authorities, coaches and Ministry experts understand about formative assessment, and the more reliable, valid, relevant, benchmark-related formative assessment tools are available, the easier it will be for teachers in a given context to use formative assessment to inform instruction.

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[19] see Mary F. Hill, Fiona R. Ell, and Gayle Eyers, "Assessment Capability and Student Self-Regulation: The Challenge of Preparing Teachers," as an example.

[20] Center for Educational Research and Innovation, "Assessment for Learning: Formative Assessment" (presentation, Organisation for Economic Co-operation and Development/Center for Educational Research and Innovation International Conference, Paris, May 2008)

[21] Abhijit Banerjee et al., *Mainstreaming an Effective Intervention: Evidence from Randomized Evaluations of "Teaching at the Right Level" in India,* (NBER Working Paper No. 22746, 2016).

[22] Abhijit Banerjee et al., *From Proof of Concept to Scalable Policies: Challenges and Solutions, With an Application,* (NBER Working Paper No. 22931, 2017).

[23] W. James Popham, "Assessment Literacy for Teachers: Faddish or Fundamental?" *Theory Into Practice,* 48, (2009).

[24] Margaret Forster and Geoff Masters, "Bridging the Conceptual Gap between Classroom Assessment and System Accountability," in *Towards Coherence between Classroom Assessment and Accountability: The 103rd Yearbook of the National Society of the Study of Education, Part II* ed Mark Wilson (Chicago: The University of Chicago Press, 2004), 51-73.

[25] Margaret Heritage, "Formative Assessment: What Do Teachers Need To Know and Do?" *Phi Delta Kappan,* 89, (2007).

Formative Assessment in the Reading Classroom: A Case Study

M r. Karim teaches grade 2 in a public school. He has 37 students enrolled and has been teaching for 13 years. He recently introduced a new type of assessment in his classroom. Prior to the current academic year, he administered tests from the curriculum standards once each term. The written tests provided some information on content that students were supposed to have learned during that term. However, Mr. Karim was not satisfied with this information. First, some students entered his class without having learned to read, and others struggled with learning in general. Thus, it was unclear whether poor performance was due to not being able to read the test questions or not being able to respond correctly to the questions. Second, the test was general and summative and did not provide any information on whether his students were making adequate progress toward the annual learning targets set by the government. Mr. Karim decided to use a new type of assessment that he had learned. He understands that formative assessment is intended to guide instruction, but he also knows that he must use instructional time wisely and not spend too much time testing students. He wants to know whether students have mastered what he has already taught and whether they are making adequate progress toward end-of-grade-level goals.

He uses two types of formative assessment tools for reading in his classroom. The first is a weekly spelling test, a mastery learning type of formative assessment, which begins with students writing letter names/ sounds from dictation until they have learned to read/ spell simple words. Then he dictates 5-10 spelling words and evaluates students' responses, looking for evidence about what students know, do not know, and

know but confuse. For example, he examines whether students' spelling includes expected letters for the sounds included in the words. The words are selected from words and patterns (e.g., *at, cat, sat, mat*) that students have been taught and, therefore, are expected to be able to decode and spell. Mr. Karim finds that spelling is a window on how students read words, and he can adjust instruction if he sees common spelling errors in students' weekly tests. If only one or a few students are having difficulty with a weekly spelling test, he works with them before or after school to make sure they learn the decoding skill necessary.

Mr. Karim has a notebook with each student's name and columns with dates and the name of the assessment tool administered. He keeps track of student scores on a weekly basis so he can see progress over time. While recording data takes some extra time, he can transfer the spelling scores easily because students write their answers. He also can quickly note from student papers whether most are making the same kinds of errors (substituting letters that look similar, for example, "b" and "d"), or whether they are omitting the same letters in words they spell. Mr. Karim can quickly see each week what needs to be reviewed or retaught, and which students require extra time before class to work on the skills they need to learn.

Because students often struggle with the same skills, Mr. Karim is able to group them according to the types of errors they make. For example, one week students were asked to spell several multisyllabic words, and three students made similar errors by substituting the same incorrect letter in two syllables in one of the words. The students spelled the Spanish word "mesa" as "masa" using an "a" as the first vowel. Mr. Karim realized that these students may need to hear and

practice the sound for "e," so he spent time with them reteaching the sound for "e" and then working with the students to spell other words with "e" so that they were no longer confused and were able to spell the sound correctly. Simple spelling tests are very quick to administer and score and provide valuable feedback on how well students understand the decoding skills being taught.

The other assessment question for Mr. Karim is whether students are "on track" to meet the end-of-the-year goals, a progress monitoring question. Mr. Karim does not want to run out of time at the end of the school year to teach students the essential skills they need to learn. Therefore, he administers an adapted ASER[26] formative assessment to students once each term. He has set cut-off scores for each term to indicate whether students are progressing in skill acquisition. For the ASER assessment, he has developed two end–of-the-year reading passages with two comprehension questions for each. He also included a paragraph, several sentences, a word list and letters so that the students who are not able to read a complete passage with minimal accuracy could try to read a paragraph, and if unsuccessful, could attempt sentences, words, and finally, letter names/sounds. He has several equivalent forms that he randomly selects for students so that no student memorizes any particular form. This assessment tool is not timed, but focuses on accuracy and therefore provides a simple way to estimate student progress in basic reading skills. Mr. Karim uses the adapted ASER tool once per term with all students. He is able to assess students one on one during the part of the day when students are completing an assignment in their exercise book or reading with a partner. It may take several days to complete the ASER with students, but the information is very useful. Mr. Karim is looking at the ASER data to see if students are improving in their performance from the previously administered ASER, and he notes

the errors in order to make certain that the skill is taught during the remedial sessions.

For students who are fluent readers at or above their grade level, Mr. Karim provides more challenging reading assessments. He has a set of passages at grades 3, 4, and 5 end-of-year difficulty levels and works with these students on more complex comprehension questions. He also asks these students to write a brief summary of what they read.

Mr. Karim summarizes student scores from the weekly spelling tests to gauge the percent of students who are spelling 90%, 80%, 75%, or below 75% of the words accurately. This provides him with a snapshot of how many students require additional instruction to help them catch up to their peers.

For the ASER test, the percentage of students who meet or exceed the term cut-off scores on each task provides data on progress for students at the end of each academic term. These data provide important information on whether students can apply what Mr. Karim is teaching them and whether they are making adequate progress in becoming proficient readers.

Mr. Karim finds that it is important to allocate catch-up time for students who are behind, so he provides after school sessions for struggling students. He knows how they are progressing with the formative assessments, so both students and Mr. Karim set goals for learning. Making learning visible to students is motivating for them and also provides students with tangible goals that they can work towards, and become motivated in achieving, based upon their individual effort.

Mr. Karim has found that teaching his students skills at their level in brief, focused daily sessions results in better learning, and students develop more confidence in their skills. He meets with the Head Teacher monthly to discuss progress and whether there are

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[26] Pratham, *Annual Status of Education Report,* (New Delhi: ASER Centre, 2018).

any available volunteers to assist in teaching groups (there are national service student teachers that are assigned to schools in his district sometimes), and he arranges to attend PTA meetings each term to share information with parents and provide them with tips to support their children in learning to read.

By the end of the second term, Mr. Karim was delighted to note a significant decline in the number of students needing additional after-school assistance. Students in his class are motivated, understand what learning progress "looks like," and enjoy learning, practicing and reaching their goals.

Formative Assessment: Next Steps in Your Context

As we have seen, the proper use of formative assessments has a positive effect on student outcomes. However, in many international contexts, the implementation of formative assessment has challenges and barriers due to a number of factors and associated needs. In this section, we include a series of questions you might explore to determine how to expand and improve the effective use of formative assessment in the reader's context. For each query, we offer some comments and insights to help you take steps to strengthen the practice of formative assessment in the reader's area (see **Table 4**).

Table 4. Query and Recommendations about Implementing Formative Assessment

Query	Considerations and Recommendations
Is formative assessment in reading (its function and implementation) correctly understood in your context?	Clear articulation about what formative assessment is (and is not) is an essential starting point. Frequent assessment using available tests does not constitute formative assessment. The purpose for which data are being collected should drive how the data are collected, on whom they are collected and to what decision-making end the data are used. Formative assessment is only worthwhile (and only formative) if it informs instruction. It is only of high quality if it follows prerequisites described in this paper. Consider conducting a landscape review of education stakeholder knowledge, attitudes and practices about assessment in reading classes. This will assist in grounding future plans to build stakeholder capacity in formative assessment for improved reading.
Are there clear labels for any formative assessment tools for reading in your context?	Confusion around assessment is common, including assessment tools and how to use them. Clear labeling of assessments that are formative (and those that are not) helps reduce confusion. Seek a detailed understanding of what assessments are used in your context and why. This will help you determine if any of your current tools are actually used for formative assessment.

Table 4 continued next page

Table 4. Query and Recommendations about Implementing Formative Assessment (continued)

Query	Considerations and Recommendations

Is your context lacking formative assessment tools for reading?	If formative assessment tools for reading are not available, take the following steps. In general, these steps should be taken by a ministry of education or external program provider, not a classroom teacher.
	
	1. Develop criteria for selection of existing assessments, or develop assessments. Make sure that:
	   a. The tools assess the skills that are most predictive of reading performance at each grade level.
	   b. The tools are reliable and valid.
	   c. The tools are easy to administer and score.
	   d. The results are actionable so teachers can use the data to make instructional decisions.
	   e. Tools are aligned to curriculum and summative assessments.
	2. Develop benchmark target scores (cut scores) for tools at each grade level to guide teacher decision-making.
	3. Develop a professional development plan to prepare relevant stakeholders to implement and score formative assessments, interpret results and use the data to inform instruction.
	
	Remember, when developing formative assessments, the technical adequacy of the tools is critical to produce quality data, which, in turn, influences quality of instructional decision making.

Does your context have some formative assessment tools, but they are of unknown quantity and/or procedures to use them are unclear?	Conduct a review of available tools. This review would usually be conducted by a ministry of education or external program provider, not by a classroom teacher. The review should: 1. Determine if assessments measure the most relevant reading skills at each grade level. 2. Evaluate the technical adequacy of each tool, making sure each is reliable and valid. 3. Determine if tools are aligned to summative assessments. 4. Determine how data are intended to be used. 5. If data are not used to make instructional decisions, develop a professional development plan to prepare teachers to implement and score formative assessments, interpret results and use the data to inform instruction.
Can teachers access professional development in formative assessment and materials that support its implementation?	In order for teachers to understand and conduct formative assessment, the concepts, processes and practical examples of formative assessment must be integrated into teacher training, including administration, interpretation and use of results to inform instruction. In addition, all instructional materials provided during training must integrate formative assessment opportunities. Curriculum and lesson plan models, ideally, should provide clear formative assessment guidance that is language- and context-specific, with tools to conduct that assessment.

Table 4 continued next page

Table 4. Query and Recommendations about Implementing Formative Assessment (continued)

Query	Considerations and Recommendations
Are the literacy coaches in your context able to support teachers in using formative assessment?	To further support teachers in integrating formative assessment into their classroom routine, coaches must be highly trained in the value, process and tools of formative assessment. During coaching, discussion of assessment to drive instruction should be a core part of specific coaching strategies, including: a. Joint development of formative assessment tools and processes b. Modeling of formative assessment in the classroom c. Joint analysis and interpretation of formative assessment results d. Modeling of instructional decision making based on formative assessment results
Are school leaders in your context able to support implementation of formative assessment?	With proper training, school leaders can also effectively support formative assessment in their schools. Provide training to school administrators to assist them in: a. Supporting teachers to successfully implement formative assessments b. Setting expectations for periodic formative assessment c. Working in collaboration with teachers to analyze formative assessment results, monitor overall progress of student groups and support decision-making concerning instructional differentiation. Create opportunities for teachers and families to discuss formative assessment results for individual children, and share information about how learning needs are being addressed

Responding to Challenges in Implementing Formative Assessment

Even in the best of circumstances, it can be challenging to implement and use formative assessment in the most effective ways. In many country contexts, there are significant challenges that have slowed the proper use of formative assessment in reading instruction. Many of these relate to the fact that formative assessment, by definition, is meant to provide data on each individual student's abilities; in large, under-resourced classrooms, it can be quite difficult to achieve this ideal. (Imagine having to conduct screening or benchmarking for 250 students in a classroom in Malawi; that is quite daunting!). Below, we explore some challenges that can arise in large-class situations and propose a few avenues for resolving these difficulties.

1. **Time:** Many formative assessments can take substantial time for each child. Some can be administered in groups of students, whereas many require working with individual students (e.g., oral reading fluency), which is a challenge in large classes. In large classes, this can be overcome by:

   a. Allocating 5 minutes per day to conduct rapid assessments with 3-5 students on core competencies, eventually reaching all students within a month

   b. Conducting group assessments when the assessments allow it – e.g., "Close your eyes and put your thumb up when you hear a word beginning with the letter s."

2. **Materials:** Some formative assessment strategies require the use of a tool with each child. In large classes, this can be overcome by:

   a. Using non-consumable materials for teaching and assessing, such as pictures, flash cards and posters.

3. **Linking to instruction:** The objective of formative assessment is to provide instruction that meets the student's needs. Larger classes compound this challenge because of the number of children requiring assistance. This can be overcome by:

   a. Dividing students into pairs, with stronger students helping weaker ones. Teachers need to provide instruction on how to work together, as this is challenging for young children.

   b. Dividing students into two groups, ones who are achieving the competency and ones who are not. Provide independent practice work (work that can be done with little direct supervision from the teacher) for students who have the competency and work directly with the students who do not.

Recommendations for USAID Missions

In order to ensure USAID reading programs successfully integrate formative assessment in program implementation, mission staff should:

a. Require proposal responses to directly address how they will include formative assessment as a key component of their program design, and how they will support teachers, schools and coaches to support it.

b. Review program materials to ensure that the structures of curriculum, and scope and sequence documents include periodic formative assessment requirements.

c. Review program materials to ensure that they include sample formative assessments, as well as guidance on how to create formative assessments.

d. Review program training plans to ensure that teachers are trained on how to implement formative assessment models and how to create formative assessments.

e. Review leadership and coach training processes and materials to ensure that formative assessment is explained to stakeholders, and their role to support it is clearly articulated.

Further Research in Formative Assessment for Improved Literacy

One of the key pieces in successful implementation of formative assessment is stakeholders' knowledge. Therefore, a critical question is how we can *effectively enhance stakeholders' knowledge and capacity* related to formative assessment, including pre-service and in-service training. Furthermore, although research evidence indicates that appropriate use of formative assessments leads to improved student reading outcomes, the majority of studies are from developed countries, and therefore, *empirical evidence from developing countries is needed.*

Evidence is also needed about the following:

- utility of formative assessments,
- appropriate benchmarks,
- cost-benefit analyses,
- effectiveness of professional development on implementation of formative assessment, and
- use of formative assessment in large-class contexts, including the efficacy of administering group assessments to determine individual needs as well as effective ways of administering individual assessments in large classes.

Conclusion

In this paper, we reviewed essentials of formative assessments in the contexts of literacy instruction. Formative assessment, by definition, is gathering and interpreting information about students' learning needs in order to inform instruction. As such, formative assessment should be part of a comprehensive set of practices implemented in reading and literacy instruction.

We may be only at the beginning of helping teachers and other education stakeholders around the world have the knowledge and tools to use formative assessment in order to differentiate instruction. The evidence-based suggestions in this paper are offered in the hopes that this will one day be a reality.

Development of the Brief

The authors reviewed relevant literature and evidence in multiple fields such as developmental psychology, education and educational methodology to gather information on literacy development, instruction and assessments. These materials were then developed into a detailed outline for which external feedback was obtained. The authors then were involved in an iterative process of writing drafts, seeking and incorporating feedback between the authors and the facilitator. This was followed by feedback from external reviewers and incorporation of the feedback before finalizing the paper.

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