Policy Report

Curbing America's Reading Crisis: A Call to Action for Our Children

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Preface

Reading involves the development of vocabulary and subskills that are key to unlocking a child's potential in school and beyond. Without adequate knowledge and skills associated with learning how to read, children's grades don't just suffer in English and language arts classes. They may find themselves struggling to understand what's expected of them to solve math problems. The ability to digest information and do skillful work in classes such as science and history is hindered as well.

As those children grow into adulthood, the consequences only multiply. Low literacy rates have been associated with higher dropout and incarceration rates, and even thoughts of suicide.[1] Adults who struggle to read are more likely to have difficulty navigating our increasingly complex healthcare system, planning for a career, and more. Also, adults at the lowest proficiency level of literacy in a national test have been shown to earn less than half as much as those at the highest level.[2]

America is in a reading crisis. Of that, there can be little doubt. As the authors of this new report point out, two in three American fourth-graders are performing below proficient in the National Assessment of Education Progress (NAEP)—known as the "Nation's Report Card."

There's another troubling component to this crisis. We are leaving important segments of our society behind. Despite decades of effort to close the achievement gap, results show that the percentage of White fourth-graders scoring proficient or higher in literacy is roughly double that of Hispanics, and 2½ times higher than Blacks (47% for Whites, 23% for Hispanics, and 20% for Blacks). Although the national public average of only 35 percent scoring proficient or higher is concerning enough, large cities tend to score much lower. In fact, a mere 5 percent of Detroit fourth-graders scored proficient or higher in the NAEP literacy exam—in other words, 19 out of every 20 students in Detroit are at risk of the array of negative consequences laid out here.

The ETS Center for Research on Human Capital and Education has issued a series of reports aimed at identifying key problems in our children's achievement struggles in America's educational system and proposing ways to address them. In this newest report from the Center, the authors open our eyes to the fact that just because our expectations are that students beyond fifth grade have mastered the mechanics of how to read, it doesn't mean they have done so. Raising comprehension scores is a futile exercise for a significant subset of children still wrestling with how to decode the words and sentences in front of them. Furthermore, the authors also highlight the critical role that background knowledge plays in reading comprehension. Students lacking the necessary background knowledge related to the topics of the texts they read may fall below a threshold and fail to comprehend a text.

The authors point to the need to break what they call the maladaptive cycle of reading: Because they lack necessary skills and background knowledge, students fail to comprehend what they read, which fosters a lower sense of self-efficacy that, in turn, feeds their desire to not want to read. One of the most effective strategies to improve reading is to do more of it. Without practice, the ability to master reading skills becomes elusive. As the report states, "good readers become better readers over time; poor readers lose ground."

We live in a time of roiled politics, but throughout American history, the goal of improving our educational system has been a unifying one where those on all sides of the political spectrum have often found common ground. On a practical level, that ability to reach common ground has, in large part, stemmed from that fact that teaching more effectively often doesn't

revolve around large financial investments, but rather on effective implementation of strategy innovations. The authors of this report go beyond identifying the complexities of our reading crisis and offer a series of recommendations that feasibly could be implemented, from continuing to measure and monitor foundational reading skills after grade 4, to allowing for the development of summative assessments of reading that also support learning, providing relevant texts and reading activities that measure academic and nonacademic topics, and supporting comprehension through increased background knowledge.

It is my hope that this report awakens policymakers, educators, and other leaders to the seriousness of America's reading crisis and that the recommendations contained in these pages serve as a basis to improving the lives of the children who need help the most.

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and Research on Human Capital & Education

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> **Once you learn to read, you will be forever free.**
>
> **—Frederick Douglass**

Introduction

Today, across America, many schoolchildren in 4th through 12th grade will push aside a reading passage, and as they do, self-doubt and frustration will set in. Thoughts such as, "This stuff is dumb," "It makes no sense," or "I'll never get it," will race through their minds. They aren't alone. Thirty-two percent of students in fourth grade—when students are expected to be able to focus on understanding passages—are instead falling critically behind.[3]

Strong reading skills propel us to achieve success in school and advance through postsecondary education, get a job and keep it, increase our level of earnings, and more. Conversely, difficulty with basic reading skills and comprehension can throw one obstacle after another in our path. In fact, research shows that a lack of literacy proficiency can have compounding negative impacts on future life outcomes.[4] So, it is deeply troubling that at a time when it is becoming increasingly clear that proficient reading and comprehension skills are critical steppingstones toward long-term success, many American students fail to adequately comprehend what they read.

Learning to read, of course, does not occur at one age or one place. It is a deeply complex journey with many hurdles along the way—each with the potential to derail a new reader's progress. Many American children make this journey successfully, if not with a little difficulty, and are able to reap the benefits of having access to effective skills. But a large number of 5th- through 10th-grade children struggle to develop key foundational skills, without which developing effective reading and comprehension becomes nearly insurmountable. Some of these children face immense obstacles on their journey due to constraints related to their socioeconomic status; others fall prey to a maladaptive cycle where failure to read feeds on itself. There will also be those who disengage from reading, lacking interest in the material or the background knowledge necessary for meaningful engagement. Some confront challenges on all of these fronts.[5] The purpose of this paper is to more deeply explore reasons for low reading proficiency and, importantly, offer tangible recommendations in one sector—assessment—for improving the prospects of less skilled readers.

We start with an overview of America's reading crisis, discussing the scope of the problem and providing context for the troubling results we see. We then turn our attention to a discussion of skill-based explanations for low reading and comprehension ability, and then go on to describe how some students can be caught in a maladaptive cycle when it comes to developing reading skills. Finally, we propose a series of actionable recommendations for policymakers, educators, and assessment designers to consider what may support the development of reading skills for students. Among the things we look at is how to increase students' desire to read and gain opportunities for early success, thus increasing their chances of continual development of reading skills.

America's Reading Crisis

Large-scale assessments of student skills indicate there are significant proportions of students in the United States who do not understand what they read. For instance, results from 2019 from the National Assessment of Education Progress (NAEP)—known as the "Nation's Report Card"—indicate only 35 percent of fourth-graders and 34 percent of eighth-graders were classified as proficient readers (National Center for Education Statistics, 2019; see callout boxes for NAEP's definition of "proficient" for fourth- and eighth-grade reading). These are troubling findings, and even more so when we take a closer look.

Fourth-Grade Reading Proficiency:

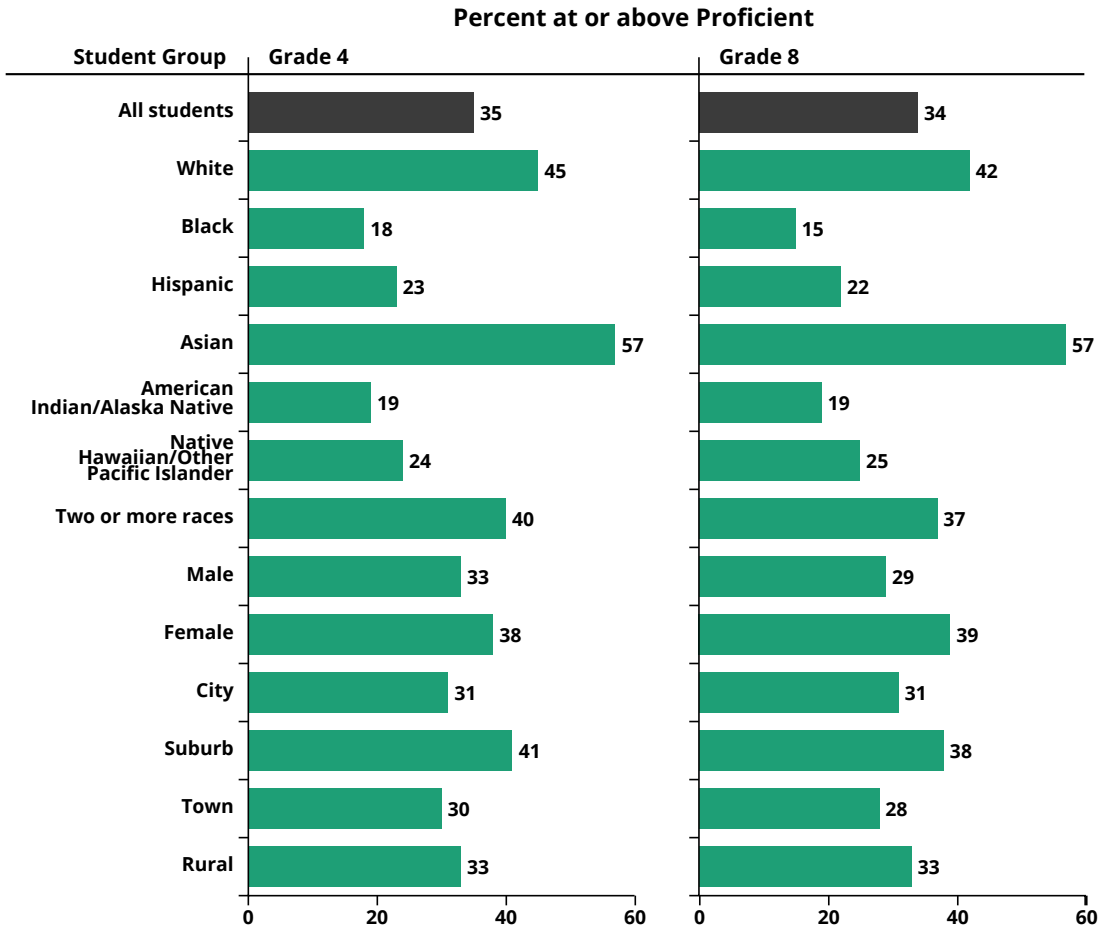
Students performing at the Proficient level should be able to integrate and interpret texts and apply their understanding of the text to draw conclusions and make evaluations.

When reading literary texts such as fiction, poetry, and literary nonfiction, fourth-grade students performing at the Proficient level should be able to identify implicit main ideas and recognize relevant information that supports them. Students should be able to judge elements of author's craft and provide some support for their judgment. They should be able to analyze character roles, actions, feelings, and motives.

When reading informational texts such as articles and excerpts from books, fourth-grade students performing at the Proficient level should be able to locate relevant information, integrate information across texts, and evaluate the way an author presents information. Student performance at this level should demonstrate an understanding of the purpose for text features and an ability to integrate information from headings, text boxes, graphics and their captions. They should be able to explain a simple cause-and-effect relationship and draw conclusions. (Source: National Association of Education Progress, see https://nces.ed.gov/nationsreportcard/reading/achieve.aspx#2009_grade4)

Figure 1 reveals that the prevalence of reading difficulty is not evenly distributed across the population. Results by race and ethnic groups indicate large achievement gaps.[6] For instance, fourth-grade Black, Hispanic, Native Hawaiian/Other Pacific Islander, and American Indian/Alaskan Native groups have a smaller proportion of students classified as proficient than the national average. These differences are very large between some groups: Asian students are almost three times as likely to be classified proficient as Black students. Similar differences are found for students in the eighth-grade sample.

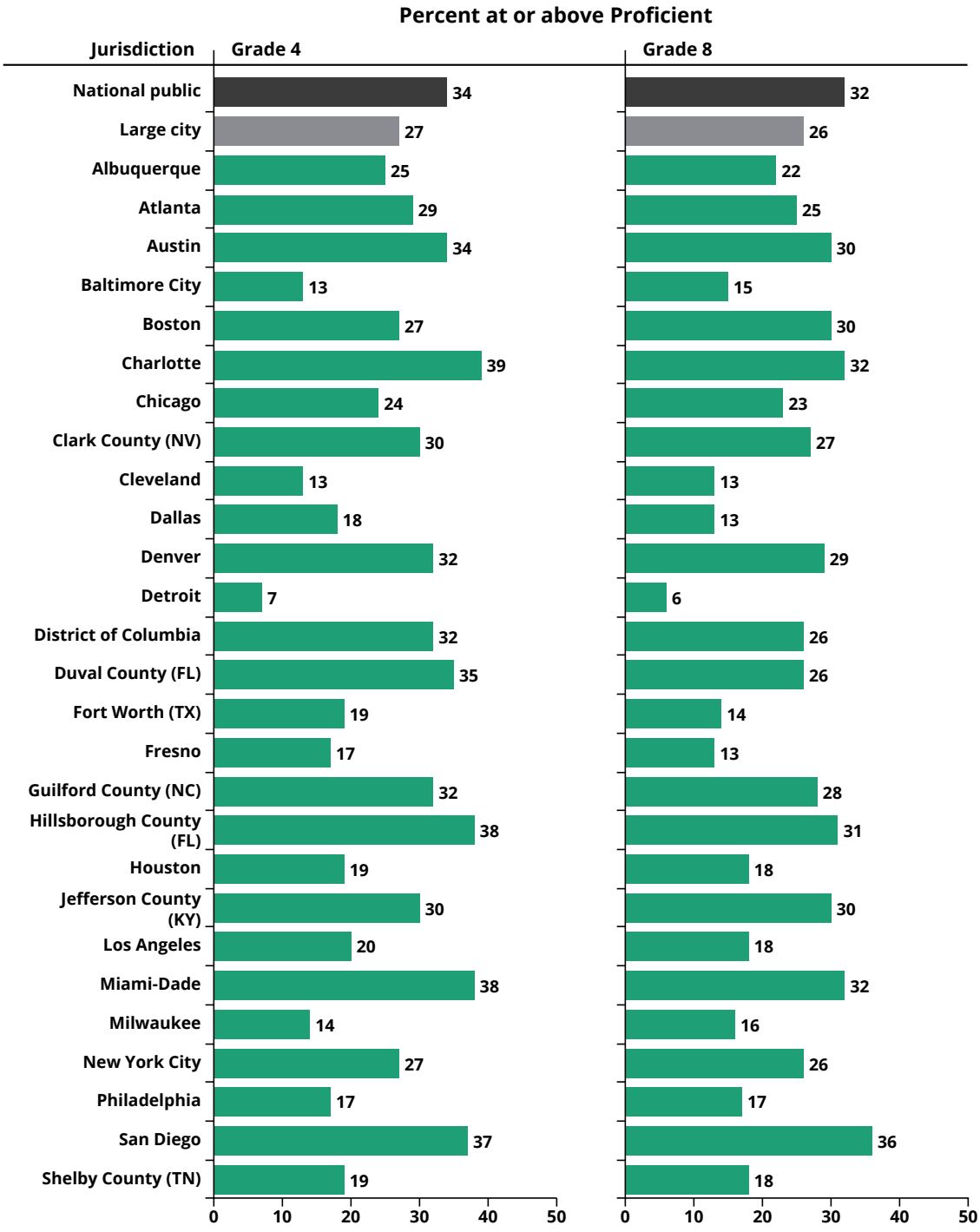
Figure 1: 2019 NAEP 4th- and 8th-Grade Reading Results by Ethnicity, Gender, and Locale



Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, NAEP Data Explorer (NDE) https://www.nationsreportcard.gov/ndecore/landing.

Proficiency differences are also evident by residential location, with higher proportions of students scoring proficient in the suburbs than in cities, towns, and rural areas. Furthermore, there is appreciable variation between urban regions (Figure 2). Consider that in Detroit, just 7 percent of the fourth-grade student population performed at or above proficient in reading, compared to 38 percent in Miami-Dade.

Figure 2: Percentage of Students Classified as Proficient on the 2019 NAEP Reading Assessment by Trial Urban District Assessment (TUDA District) and Grade Level



Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, NAEP Data Explorer (NDE) https://www.nationsreportcard.gov/ndecore/landing.

Eighth-Grade Reading Proficiency:

Students performing at the Proficient level should be able to provide relevant information and summarize main ideas and themes. They should be able to make and support inferences about a text, connect parts of a text, and analyze text features. Students performing at this level should also be able to fully substantiate judgments about content and presentation of content.

When reading literary texts such as fiction, poetry, and literary nonfiction, eighth-grade students performing at the Proficient level should be able to make and support a connection between characters from two parts of a text. They should be able to recognize character actions and infer and support character feelings. Students performing at this level should be able to provide and support judgments about character motivation across texts. They should be able to identify how figurative language is used.

When reading informational texts such as exposition and argumentation, eighth-grade students performing at the Proficient level should be able to locate and provide facts and relevant information that support a main idea or purpose, interpret causal relations, provide and support a judgment about the author's argument or stance, and recognize rhetorical devices. (Source: National Association of Education Progress, see https://nces.ed.gov/nationsreportcard/reading/achieve.aspx#2009_grade8)

For students who struggle with reading and comprehension, the impacts can be severe and lasting. There is a growing body of evidence suggesting that less-skilled readers tend to have lower levels of educational attainment and are less likely to participate in the workforce or earn high wages than more literate peers.[7] These differences are not trivial. Take wage earnings for example. Adults who score at the lowest proficiency level in literacy earn less than half as much per week on average as adults who score at the highest proficiency level on a national literacy test.[8] The effects don't end there. Reading ability is also associated with self-reported health—adults who scored lower on a measure of reading ability were more likely to report poor health than higher-skilled peers, even after the effects of age, gender, race, and socioeconomic status were taken into account.[9] Low literacy rates have also been associated with higher dropout rates and even thoughts of suicide (or suicide attempts).[10] And, there are negative associations between literacy and incarceration—juvenile offenders have relatively lower levels of literacy than nonincarcerated individuals.[11] While the relations between reading ability and these indicators are only associative in nature, they serve as a reminder of the potential long-term and high-stakes consequences of failing to read adequately.

The distribution of poor reading skills by race, ethnicity, and location evident in the NAEP data closely follows the contours of deeper social and economic inequities in our society.[12] Sean Reardon's recent work examining the geography of test-score gaps finds, for example, that the strongest correlates of achievement gaps are differences in parental income, parental education levels, and patterns of racial and ethnic segregation. In other words, these are complex problems, ones with no quick, cheap, or easy solution. Further, the gaps between and within groups cannot be solely resolved within the school or through a certain curriculum. However, we believe that we can nevertheless make some progress. The complexity of the reading crisis is no excuse for inaction.

In this paper, we propose a model of reading that affords some modest entry points for curbing America's reading crisis. In short, we argue that it is possible to break the maladaptive pattern of reading that contributes to a negative cycle. In addition, we put forth a set of seven recommendations that policymakers and educators should consider to help improve reading. To achieve these aims, we focus on one possible lever of change that is in our wheelhouse—assessment. Not just any assessments. Our focus is on assessments that are designed to both measure and support learning. But first, we look more closely at some of the skills-based sources of the reading challenge we face.

Reasons for Low Reading Comprehension and Foundational Reading Skills

Reading comprehension comprises a constellation of integrated skills. As such, the process can break down at many points.[13] Thus, it is not surprising that many students struggle. While less-skilled readers generally have difficulty in a wide range of reading subskills, there are some areas of particular weakness. These weaknesses can be divided into two sets: reading comprehension and foundational reading skills. In a traditional sense, reading comprehension is the ability to extract a meaning from text (what the text is about), while foundational reading skills are the building blocks required to "get the words off the page." In terms of reading comprehension skills, less-skilled readers have more trouble drawing inferences, particularly when the inference requires that students connect ideas across different parts of text.[14] When less-skilled readers do draw inferences, they are sometimes incorrect.[15] Less-skilled readers also tend to display lower levels of metacognition (strategic, self-regulated learning), are less attuned to text structure, and are not as adept at using global strategies such as summarization.[16] They are also less likely to comprehend and remember the central ideas of a text relative to the details (i.e., centrality effect).[17] What's more, the disadvantages that less-skilled students experience are not restricted to the global aspects of text comprehension. Even at the most basic level of understanding, less-skilled readers are more likely to have comprehension difficulties. For instance, less-skilled readers tend to generate more inaccurate paraphrases than skilled readers.[18]

In addition to comprehension challenges, many less-skilled students lack adequate foundational reading skills. For instance, they often have smaller vocabularies and less morphological awareness (the ability to understand word parts and their meanings), are less fluent, and have lower levels of phonemic awareness (understanding the smallest units of sounds in a word's structure) and decoding skills (letter and sound correspondences).[19] Weaknesses in foundational skills should not be understated as they can have a far-reaching impact on reading comprehension. For instance, recent research found that fourth-grade students who were less fluent on an oral reading task (a solid indicator of the degree to which foundational reading skills are automatized) were also more likely to score at the lowest levels on the NAEP reading comprehension test.[20] More specifically, that research showed, of students who read the text at a rate of less than 85 words per minute, 73 percent scored below basic on the NAEP reading comprehension test. In short, weakness in foundational reading skills is associated with inadequate comprehension, and as many as 30 percent of fourth graders (approximately 1.1 million students in the United States) possess inadequate prosodic (rhythm, expression) oral reading and comprehension of grade-level texts. The prevalence and consequences of weak foundational skills are significant for fourth-grade readers.

The impact of foundational reading skills is not restricted to elementary students. Researchers examining relations between students' decoding skills and their reading comprehension in a sample of over 10,000 fifth- through tenth-grade students primarily from an underserved population found evidence of a decoding threshold, which suggests that students may need a minimum level of decoding skill to comprehend text.[21] In that sample, as many as 38 percent of students in grade 5 and 19 percent in grade 10 had inadequate decoding skill that limited their ability to adequately comprehend text. It is important to note that foundational reading skills are rarely assessed after grade 5. One important example of this is the Common Core state standards, a set of academic standards that students are

expected to meet in each grade, which do not address foundational reading skills after grade 5. Thus—and this is a critical point—low scores on a comprehension test after grade 5 are likely to be misinterpreted as reflecting weakness in comprehension skills only.

The existence of a decoding threshold indicates that older students may have problems with decoding that may limit how much text is understood. In another study, which was longitudinal, the authors also examined the relations between decoding and comprehension for over 30,000 students drawn from the same underserved population. Here they found little to no growth in students' reading comprehension over time if students fell below the decoding threshold. For example, fifth-grade students who were above the threshold saw an increase of about 3 points (20 percent of a standard deviation) on reading comprehension each year, and their rate of growth also increased each year (.38 points). However, those who scored below the threshold showed little to no growth (less than 1 point) over time. Certainly, there is a strong link between the level of students' foundational skills and reading comprehension, particularly for less-skilled populations. This is in part because inefficient foundational skills may use up critical resources required for higher-level comprehension.[22] In short, the prevalence and consequences of the foundational reading problems are significant; due to weak foundational skills, a large number of students cannot comprehend text or grow over time. In other words, a reading comprehension problem is sometimes caused by foundational reading-skill weaknesses.

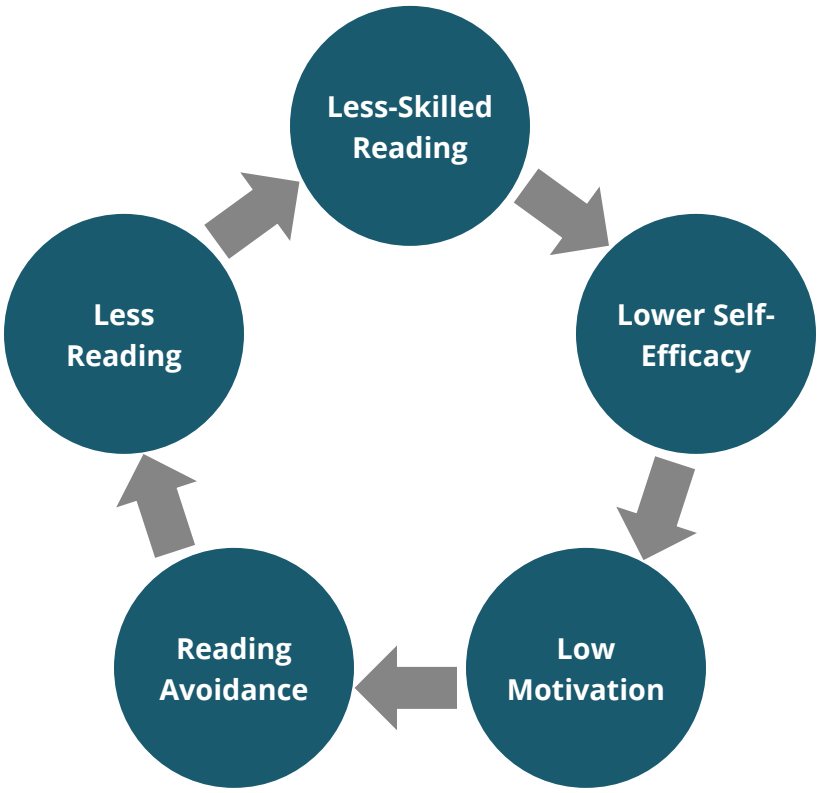
In theory, providing students with reading interventions that focus on one or more of the various subskills where low-level readers struggle should increase performance on the particular subskill—and reading ability in general. Indeed, there is a large body of research on the topic of reading strategies and interventions and how they can be effective for promoting reading ability.[23] However, other work indicates that robust and sustainable improvements in reading are difficult to achieve even with intensive interventions.[24] Reading comprehension is impacted not only by the skills that compose it, but also by circumstances, dispositions, attitudes, and behaviors that can either support or impede reading development. Below, we discuss a select combination of these features that may actually impede reading development.

Reading Avoidance, Self-Efficacy, and Motivation: A Maladaptive Cycle

Reading comprehension problems are not, of course, entirely based on skill deficits. External influences can impact a student's academic performance, for example, the environment for learning in the home, the level of parents' education and involvement, the quality of schools and teaching, and inequalities among various neighborhoods and communities.[25] Critical policy changes implemented in schools and communities can potentially promote change. However, without significant investments and decision-making power at the school, community, and state level, these impacts are not readily accessible—and thus are beyond the scope of this paper. Instead, our focus is on outlining an explanation that may account for some of the skill-based reasons why many students fail to become skilled readers and to try to offer tangible solutions to address those issues.

Figure 3 provides a schematic of one possible chain of factors that may prevent reading development and was inspired by work by Cunningham and Stanovich (2001). While the causal order of the influences can be debated, the purpose is to illustrate how poor reading ability may feed on itself to perpetuate a potentially harmful cycle.

Figure 3: The Maladaptive Cycle of Reading



The figure contains five elements that start at the top with "less-skilled reading" and continue clockwise though a set of four related factors: "lower self-efficacy," "low motivation," "reading avoidance," and "less reading." Less-skilled readers often have a lower sense of self-efficacy or belief that their actions have an impact on the world. These beliefs may be somewhat stable—meaning their influence is long lasting and pervasive. Less-skilled readers also tend to be less motivated to read. Low motivation coupled with low levels of self-efficacy may cause students to read less.

However, skilled reading requires that students practice reading over time, meaning the very avoidance of reading prevents less-skilled readers from having the opportunity to improve their skills. The cyclic nature of this can perpetuate "the rich get richer and the poor get poorer" effect—in this case, good readers become better readers over time, while poor readers lose ground.[26] One of the challenges for educators is to uncover ways to break the maladaptive cycle so that students with low skills can become agents of their own learning, working to develop and improve their skills.

One of the foundational assumptions of the model in Figure 3 concerns the association between reading achievement and the volume of reading required to become a skilled reader. Much of the empirical work supporting this premise suggests that skilled readers tend to read significantly more than less-skilled readers.[27] One possible reason is that reading is a skill, and many of the components involved in becoming a skilled reader need to be automatized over time.[28] That is, the skill needs to be practiced until it requires little or no thought to execute.[29] When a skill becomes automatized, it frees up other resources for more demanding processing such as reasoning and critical thinking. While reading ability involves conscious processes such as metacognition and self-regulation, other processes such as the automatic identification of words and general reading fluency are critical for reading development.[30] The assumption is indirectly supported by research that it is difficult to change a person's reading skill in the near term, even when intensive reading interventions are implemented.[31] Thus, in order for less-skilled readers to become proficient over time, they need to read more.

Although this solution for improving reading ability sounds simple and intuitive, it is more complex and problematic for less-skilled readers. Less-skilled readers are likely to avoid tasks such as reading and homework, and less-motivated students don't read as much.[32] Given these circumstances, how can they acquire the exposure to texts and practice they need to improve their reading? What's more, less-skilled readers lack confidence in their reading ability.[33] In other words, multiple factors work together to prevent less-skilled readers from getting the level of exposure to text that they need, with reading development suffering as a result. To make improvements, this cycle of maladaptive reading behaviors and attitudes needs to be broken. Students need to start reading, persist over time, and develop the confidence and motivation to continue building their skills. If foundational skills such as decoding are not adequate, growth in students' reading comprehension over time is not likely to occur.[34]

How Can We Break the Maladaptive Cycle of Reading?

Some students may become disenchanted by formal educational settings because they don't view them as relevant to their lives. Thus, one seemingly easy solution to address the maladaptive cycle is to provide more "interesting" and "relevant" materials to read. While this solution might make intuitive sense, it is complicated, as there is often no single text that is interesting to all students, and in real life, people are often forced to read uninteresting texts.[35] Nonetheless, there have been formal and informal attempts to improve reading

engagement through efforts to impact interest and cultural relevance.[36] For instance, teachers have been able to use popular music to engage students in reading and content-area learning, including with biology and poetry.[37] While empirical support for the efficacy of such approaches is thin, scholarly discussions on the topic suggest promise.[38] However, even if future studies were to emerge to support the empirical bases of using popular culture to teach reading, English, and content-area learning, there are a number of complexities to navigate before it could be implemented and properly evaluated. With that said, while there is a relationship between student interest and reading comprehension, interest is not always a good predictor of comprehension.[39] Although student interest has a role in reading development, the solution is complex, and there may be other more direct ways to support development.

For instance, background knowledge has been shown by a growing body of research to be one of the strongest predictors of reading comprehension and may serve as a foundation to help partially compensate for weaker reading skills.[40] We refer to background knowledge as the set of concepts, principles, facts, and their interrelations that a student knows before reading a text. While general knowledge of the world is important for reading comprehension, specific background knowledge of a particular domain (e.g., science) and topic (i.e., cell division) are more important for a student to be able to understand and learn from text.[41] In terms of the current discussion, background knowledge is a potential lever to initially help break the maladaptive cycle of reading by allowing students to experience some success while reading texts that are more familiar.[42] Some support for this notion comes from a study by McCullough (2013), which examines the relations between student interest, reading skill, and background knowledge. The research indicates that students performed better when they had more knowledge about culturally relevant material. However, the issue is complex because, for example, having high knowledge on a topic does not necessarily mean texts on the same topic will be deemed interesting or as the easiest to read.

Of course, reading ability and background knowledge interact in meaningful ways. In particular, there is evidence of a compensation effect: Students with mid- to high cultural background knowledge, but lower reading ability, outperform students with higher reading ability but lower cultural background knowledge. In other words, students with weaker reading skills are able to draw upon their high background knowledge to help them understand the culturally relevant text by presumably drawing more knowledge-based inferences.[43]

Measuring students' background knowledge before they read a text may provide alternate ways to interpret low comprehension scores (i.e., they may be constrained by low knowledge).[44] In a practical education context, background knowledge could be a useful entry point to encourage students to read in the short term, and possibly continue reading over time. However, a long-term solution is needed as students also need to read unfamiliar material to effectively participate in society, and in such cases, students' foundational reading skills are critical. Additional research would help determine whether it is a viable and effective solution to give students an initial boost from familiar materials and, as skills and persistence build, slowly switch them to less familiar materials so they can infer and gain new knowledge.

Solutions for breaking the maladaptive reading cycle will require significant reform at many levels—from investments in communities and families to the development of specific reading skills. However, we believe one source of promise is available in the design and use of assessment.

The Role of Assessment for Addressing America's Reading Crisis

Assessments are an integral part of education and the evaluation of student performance. Like any tool, assessments can be misused, take time away from instruction, and—without careful design—disadvantage individuals or groups.[45] However, by designing assessments that both support and measure learning, we believe assessment can be transformed from a tool that measures the product of learning to a device that models the *process* of learning, especially for 4th- to 12th-grade students. Assessment designs can be developed and implemented that fine tune the types of source content and provide feedback that will increase students' initial motivation to read and encourage them to develop appreciation of reading, bolster persistence to read, and build reading skills over time. This is an especially advantageous approach for less-skilled readers. Increased motivation and appreciation go a long way toward ensuring continual development of reading ability.[46]

One example of the role well-designed assessments can play is the provision of critical diagnostics regarding which of an individual's skills are well developed and which need improvement. This makes assessment a valuable tool for improving individual's reading skills if action follows from the diagnostics. The value of the assessment can be significantly greater if it also develops and hones test takers' reading comprehension skills.

Below, we present a series of recommendations for policymakers, educators, and assessment designers to consider as they make decisions about the future of assessment and the future of our children. The first set is skills based.

Skills-Based Recommendations

1. *Measure both foundational and integrated comprehension skills.*

   While there are a number of reasons why students cannot read proficiently, foundational reading skills and comprehension skills are key challenges. By measuring them, educators are in a better position to diagnose at least some of the problems so they can adjust their instruction accordingly. In terms of measuring foundational skills, attention should be placed on decoding and word recognition skills, general vocabulary, morphology, reading efficiency, sentence processing, and basic reading comprehension.[47]

   Also, assessments should reflect a more modern view of reading comprehension. Traditionally, a large number of reading assessments measure a student's ability to comprehend a single printed text through a variety of items (e.g., inference, author purpose, locate key information and details). In recent years, however, researchers and educators have argued that the construct of reading has changed and focus should be placed on measuring higher-level comprehension skills, including integration, synthesis, evaluation of multiple texts, perspective taking, and complex reasoning in print and digital contexts.[48]

   In line with this movement, researchers and testing companies have used scenario-based assessment[49] to measure more demanding comprehension activities that occur in academic and nonacademic contexts. Scenario-based assessment is a technique for delivering a set of assessment texts, tasks, and items in a structured

way. Key to this approach is the belief that what it means to comprehend text is dependent upon the purpose for reading. This purpose helps determine what information a reader should attend to, and at what level of depth. For instance, if the goal of reading is to find a date (when was the Eiffel Tower built?), then a person does not have to read the full text and instead can merely scan the text to find the answer. In contrast, if the purpose of reading is to solve a problem or make a decision (what cell phone should I buy, based on price, features, and reliability?), a person may have to read several texts (e.g., product website, reviews, consumer reports), evaluate the sources (are they biased?), integrate consistent information, resolve discrepancies, and use this information to achieve the ultimate goal. Varying the purpose of reading not only better approximates how people read in the real world but also changes how people process text at different levels of depth.

During a typical scenario-based assessment, students are given a plausible purpose for reading a collection of diverse sources as they are asked to evaluate, integrate, and synthesize information in accordance to their goals for reading. Tasks and activities are structured to both build students' understanding and help determine areas of students' strengths and weaknesses. Simulated peers and instructors are included in the design to review task goals, provide hints, and help scaffold test takers' understanding. There are also learning progressions incorporated into some designs that help identify the level of development of the student. Thus, while scenario-based assessments measure a more modern construct of reading, they also support it by design. In other words, scenario-based assessments can potentially be diagnostic while supporting instruction and learning.[50] In short, we advocate measuring both foundational reading skills and integrated, higher-level comprehension.

2. *Continue to measure and monitor foundational reading skills after grade 4.*

Students are taught how to read printed text in the early grades, and progress toward this goal is typically monitored.[51] Around grade 4, however, reading instruction shifts from learning how to read (i.e., foundational skills) to reading comprehension. Thus, it is generally assumed that problems associated with foundational skills are rare or nonexistent after this period, and, as a result, the monitoring of these skills is not common for the bulk of students after fifth grade.[52] Although there is evidence that foundational skills are a weaker predictor of reading comprehension than language skills for later grades, this does not mean that all students in middle and high school have adequate foundational skills. For example, there is evidence that weak foundational skills may limit middle and high school students' comprehension.[53] The consequence of not measuring foundational skills after grade 5 is that some students may go undiagnosed and not receive the proper foundational skill intervention they need.

Educators should continue to assess foundational reading skills for students who score low on a comprehension test, with regular monitoring after fifth grade to avoid the possibility of misdiagnosing students. This action will aid educators in developing the instructional plan that is most appropriate for a particular student's needs.[54]

3. *Allow for the development of summative assessments of reading that also support learning.*

   Summative assessment can and should play a role in not only documenting what students have learned, but also to help support learning.[55] For instance, adding items to summative assessments that measure supportive reading strategies will encourage their use in the classroom and help less-skilled students develop good habits of mind that might improve their strategic behaviors.[56] Scenario-based assessments, for example, can incorporate a wide range of features to support students' knowledge building, learning, and strategic processing. Blending the empirical research in the learning sciences with assessment design to model and support reading-skill development may yield positive results for all students, but especially for those who struggle.[57] Preliminary evidence suggests this is a worthwhile goal, as some students who take a scenario-based assessment do learn some concepts and vocabulary they did not know before taking the comprehension assessment.[58] Although these findings are encouraging, more work is needed to determine who learns and who doesn't during a scenario-based assessment and why. On balance, however, we argue that summative assessments of reading should also support and possibly measure learning, particularly in light of changes to the construct of comprehension, which are potentially more demanding.

Social, Affective, and Knowledge-Based Recommendations

Breaking the maladaptive cycle of reading involves more than just addressing skills-based weaknesses. In this section, we address four points that focus on social, affective, and knowledge-based recommendations.

1. *Allow for collaborative learning environments.*

   Reading is a social activity that involves transactions between the reader, the author, one's peers, and the larger disciplinary community.[59] For instance, at one level, teachers often discuss text with their students, and students discuss the meaning of texts with their peers. At a different level, scientists submit their research to a process of peer review that evaluates the quality of the work with respect to the standards of the discipline.[60] In both cases, the text is a medium for social interaction and a potential vehicle for constructive feedback and support.

   The social nature of reading—the collaborative aspect—is beneficial for all readers, especially for less-skilled students. Students can support and scaffold each other, building upon their relative strengths and weaknesses. Or, in the case of scenario-based assessment, collaboration can be simulated through a set of predefined "interactions" designed to build student knowledge, scaffold understanding, correct misconceptions, and reinforce socially supportive behavior. Whichever approach is utilized, collaborative learning environments are useful for building student knowledge, modeling skilled reading, and providing socially constructive models of behavior.

2. *Provide relevant texts and reading activities that measure academic and nonacademic topics.*

   Reading interventions should include materials that are relevant for students to retain the interest of those who are prone to tuning out academic tasks because they don't seem relevant to their lives.[61] This may not only benefit students' engagement through an increase in interest, but also support comprehension through increased background knowledge. If students experience success from reading relevant and approachable text, they may read more often and subsequently build their reading skills over time. Specifically, topics should be expanded to include nonacademic texts, which often feel more relevant and familiar to students.

3. *Measure and support students' knowledge.*

   Background knowledge is an integral part of expertise, development, and reading comprehension.[62] However, it is often not directly measured in the context of formal reading comprehension assessments despite research that suggests possessing knowledge related to the texts on such an assessment is associated with higher comprehension scores.[63] Background knowledge serves as an important vehicle to orient students toward reading text. So, by measuring students' knowledge, we can not only potentially determine its effect on comprehension, but also possibly assign different texts based on their level of knowledge. More familiar texts will be easier to understand, thereby increasing students' early success and confidence with reading. Over time, as students become fluent and better readers, less familiar texts can be supplied to build students' ability to learn and understand new material. In this way, background knowledge can be used to help build students' reading skills over time by encouraging students to read more.

4. *Build student confidence through success.*

   Students need to be given the opportunity to taste success and crave it. Well-designed assessments can play a role in supporting skill development that can lead to greater successes. This can be achieved by integrating learning supports into the assessment and by breaking down complex tasks into manageable units. By identifying what students can do, instruction can be leveraged to build upon their strengths.[64] As a byproduct of this "deconstruction" approach, students may also experience some sense of reward and gratification for completing a task. In this way, the experience of success helps to break the maladaptive cycle of reading. Nonacademic texts, as well as texts that are on more familiar topics, should be more accessible to read, thus providing a chance for early success. Some of the peer support, scaffolding, and modeling techniques used in scenario-based assessment may help students achieve early success and confidence. This should translate to more reading over time and, consequently, reading skills will improve. To better understand the impact of scenario-based assessments on student motivation and confidence, however, more research is needed.

Conclusion

Literacy is critical to success as measured by a wide range of life outcomes. However, students are falling short, and these problems are magnified for underserved groups. Our children deserve better.

Although there are countless social, community, family, and other environmental factors that can be leveraged to improve the reading skills of America's children, we argue that a part of the problem might be addressed with key assessment reforms. We believe that well-designed assessments that aid students and include learning opportunities to locate skill weaknesses, build knowledge, and support reading development have a powerful role to play. We encourage policymakers, educators, and other stakeholders to view these recommendations as a portal toward making measurable impact in a critical area in the lives of students across America.

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42 The state of Louisiana is now exploring ways to leverage students' background knowledge to affect reading outcomes and assessment. See Louisiana Department of Education press release at https://www.louisianabelieves.com/newsroom/news-releases/2018/07/27/louisiana-essa-innovative-assessment-pilot-first-to-receive-federal-approval. A similar proposal has also been advocated by Baltimore City Public Schools. See Tara Garcèa Mathewson, "How Gaps in Content Knowledge Hold Students Back," *Hechinger Report,* March 28, 2019, https://hechingerreport.org/how-gaps-in-content-knowledge-hold-students-back/.

43 Danielle S. McNamara, Manuel de Vega, and Tenaha O'Reilly, "Comprehension Skill, Inference Making, and the Role of Knowledge," in *Higher Level Language Processes in the Brain: Inference and Comprehension Processes*, eds. Franz Schmalhofer and Charles A. Perfetti (Mahwah, NJ: Erlbaum, 2007), 233–251; similar compensation effects have been found in other contexts and populations, so this study is not unique in its findings. See also Miller and Keenan, "Word Decoding Skill"; Miller and Keenan, "Understanding the Centrality Deficit"; O'Reilly and McNamara, "Impact of Science Knowledge"; Donna R. Recht and Lauren Leslie, "Effect of Prior Knowledge on Good and Poor Readers' Memory of Text," *Journal of Educational Psychology* 80 (1988): 16–20, http://dx.doi.org/10.1037/0022-0663.80.1.16; Wolfgang Schneider, Joachim Körkel, and Franz E. Weinert, "Domain-Specific Knowledge and Memory Performance: A Comparison of High- and Low-Aptitude Children," *Journal of Educational Psychology* 81 (1989): 306–312, http://dx.doi.org/10.1037/0022-0663.81.3.306; Barbara M. Taylor, "Good and Poor Readers' Recall of Familiar and Unfamiliar Text," *Journal of Reading Behavior* 11 (1979): 375–380, https://psycnet.apa.org/record/1981-25531-001; Carol H. Walker, "Relative Importance of Domain Knowledge and Overall Aptitude on Acquisition of Domain-Related Information," *Cognition and Instruction* 4 (1987): 25–42, https://www.jstor.org/stable/3233549?seq=1#metadata_info_tab_contents. Although the knowledge compensation effect may help less-skilled readers understand text, it is not a long-term solution. Students need to build up their foundational reading skills over time, and they must also read unfamiliar texts to be able to learn new information and function in society.

44 Tenaha O'Reilly, Zuowei Wang, and John Sabatini, "How Much Knowledge is Too Little? When a Lack of Knowledge Becomes a Barrier to Comprehension," *Psychological Science* (2019): 1–8, https://doi.org/10.1177/0956797619862276. The authors found support for a knowledge threshold hypothesis, which states that there is a minimal amount of background knowledge required to understand a text at a sufficient level.

45 Jennifer Murrer, *Instructional Time in Elementary Schools: A Closer Look at Changes for Specific Subjects* (Washington, DC: Center on Education Policy, 2008), https://www.cep-dc.org/displayDocument.cfm?DocumentID=309.

46 Susan Lutz Klaudaand John T. Guthrie, "Comparing Relations of Motivation, Engagement, and Achievement among Struggling and Advanced Adolescent Readers,"*Reading and Writing* 28, no. 2 (2015): 239–269, https://dx.doi.org/10.1007%2Fs11145-014-9523-2; John T. Guthrie and Susan Lutz Klauda, "Effects of Classroom Practices on Reading Comprehension, Engagement, and Motivations for Adolescents," *Reading Research Quarterly* 49, no. 4 (2014): 387–416,https://doi.org/10.1002/rrq.81; Ulrich Schiefele and Sebastian Löweke, "The Nature, Development, and Effects of Elementary Students' Reading Motivation Profiles," *Reading Research Quar*terly 53, no. 4 (2018): 405–421, https://doi.org/10.1002/rrq.201.

47 Although there are a wide range of measures to assess students' skill in each of these components separately, we recommend using a battery that can measure all skills simultaneously. One such measure, called SARA, has been used extensively with underserved populations; John Sabatini, Kelly Bruce, Jonathan Steinberg, and Jonathan Weeks, *SARA Reading Components Tests, RISE Forms: Technical Adequacy and Test Design* (Research Report No. RR-15-32), (Princeton, NJ: Educational Testing Service, 2015), https://doi.org/10.1002/ets2.12076. It is one of the few measures that passes the most stringent standards set forth by Haberman and colleagues for providing evidence of unique subtest information. See: Shelby J. Haberman, *When Can Subscores Have Value?*

(Research Report No. RR-05-08), (Princeton, NJ: Educational Testing Service, 2005), http://dx.doi.org/10.1002/j.2333-8504.2005.tb01985.x; Sandip Sinharay, Shelby Haberman, and Guatam Puhan, "Subscores Based on Classical Test Theory: To Report or Not to Report," *Educational Measurement: Issues and Practice* 26 (2007): 21–28, https://doi.org/10.1111/j.1745-3992.2007.00105.x. It has defensible subtest scores for each of its six components, and there are alternate forms that are equated for difficulty. The measure can be used diagnostically to help determine students' strengths and weaknesses in foundational skills and can be used in pre- and post-test designs to measure growth.

48 Patricia Alexander, Emily Fox, Liliana Maggioni, and Sandra M. Loughlin, "Reading into the Future: Competence for the 21st Century," *Educational Psychologist* 47, no. 4 (2012): 259–280, https://dx.doi.org/10.1080/00461520.2012.722511; M. Anne Britt, Jean-Francois Rouet, Amanda M. Durik, *Literacy beyond Text Comprehension: A Theory of Purposeful Reading* (New York: Routledge, 2018); Susan R. Goldman, M. Anne Britt, Willard Brown, Gayle Cribb, MariAnne George, Cynthia Greenleaf, Carol D. Lee, and Cynthia Shanahan, "Disciplinary Literacies and Learning to Read for Understanding: A Conceptual Framework for Disciplinary Literacy," *Educational Psychologist* 51, no. 2 (2016): 219–246, https://doi.org//10.1080/00461520.2016.1168741; Maria LaRusso, Ha Yeon Kim, Robert Selman, Paola Uccelli, Theo Dawson, Stephanie Jones, Suzanne Donovan, and Catherine Snow, "Contributions of Academic Language, Perspective Taking, and Complex Reasoning to Deep Reading Comprehension," *Journal of Research on Educational Effectiveness* 9, no. 2 (2016): 201–222, https://doi.org/10.1080/19345747.2015.1116035.

49 Randy E. Bennett, "Theory of Action and Educational Assessment" (paper presented at the National Conference on Student Assessment, Orlando, FL, June 2011); Randy E. Bennett, *CBAL: Results from Piloting Innovative K–12 Assessments* (Research Report No. RR-11-23), (Princeton, NJ: Educational Testing Service, 2011), https://www.ets.org/research/policy_research_reports/publications/report/2011/issc; Randy Elliot Bennett and Drew H. Gitomer, "Transforming K-12 Assessment: Integrating Accountability Testing, Formative Assessment and Professional Support," in *Educational Assessment in the 21st Century*, eds. Claire Wyatt-Smith and Joy Cumming (New York: Springer, 2009), 43–62; Paul Deane, Yi Song, Peter van Rijn, Tenaha O'Reilly, Mary Fowles, Randy Bennett, John Sabatini, and Mo Zhang, "The Case for Scenario-Based Assessment of Written Argumentation," *Journal of Reading and Writing* 32 (2018): 1575, https://doi.org/10.1007/s11145-018-9852-7; O'Reilly and Sabatini, *Performance Moderators and Scenarios*; Tenaha O'Reilly and Kathleen M. Sheehan, *Cognitively Based Assessment of, for and as Learning: A Framework for Assessing Reading Competency* (RM–09–26), (Princeton, NJ: Educational Testing Service, 2009), https://doi.org/10.1002/j.2333-8504.2009.tb02183.x; John Sabatini, Tenaha O'Reilly, and Paul Douglas Deane, *Preliminary Reading Literacy Assessment Framework: Foundation and Rationale for Assessment and System Design* (Research Report No. RR-13-30), (Princeton, NJ: Educational Testing Service, 2013), https://dx.doi.org/ 10.1002/j.2333-8504.2013.tb02337.x.

50 For instance, learning progressions and scenario-based assessment have been used in the domain of argumentation to help locate what parts of argumentation skill may need improving (e.g., classify reasons as being for or against a position, recognize evidence supporting a claim); (Deane et al., "Scenario-Based Assessment.").

51 Stanley L. Deno and Douglas Marston, "Curriculum-Based Measurement of Oral Reading: An Indicator of Growth in Fluency," in *What Research Has to Say About Fluency Instruction*, eds. S. Jay Samuels and Alan E. Farstrup, (Newark, DE: International Reading Association, 2006), 179–203; Stanley L. Deno and Lynn S. Fuchs, "Developing Curriculum-Based Measurement Systems for Data-Based Special Education Problem Solving," *Focus on Exceptional Children* 19 (1987): 1–16, https://www.researchgate.net/publication/290126875_Developing_Curriculum-Based_Measurement_Systems_For_Data-Based_Special_Education_Problem_Solving; Stanley L. Deno, Amy L. Reschly, Erica S. Lembke, Deanne Magnusson, Stacy A. Callender, Holly Windram, and Nancy Stachel, "Developing a School-Wide Progress-Monitoring System," *Psychology in the Schools* 46 (2009): 44–55, https://doi.org/10.1002/pits.20353.

52 Note foundational skills are not covered in the Common Core Standards after grade 5.

53 Researchers find a decoding threshold for students in grades 5–12, and students who fall below the threshold typically display little to no growth in their reading comprehension over time as compared to students who are above it (Wang, "Decoding and Reading Comprehension"). Thus, if educators assume that foundational reading skills are adequate beyond grade 5, they may inappropriately conclude that low scores on a reading comprehension test are due to weaknesses only in reading comprehension skills. In other words, if foundational skills are not measured or monitored, their effect on comprehension is not known. Barbara Foorman, David J. Francis, Sally E. Shaywitz, Bennett A. Shaywitz, and Jack M. Fletcher, "The Case for Early Reading Interventions," in *Foundations of Reading Acquisition and Dyslexia: Implications for Early Intervention,* ed. Benita Blachman (Mahwah, NJ: Erlbaum, 1997), 243–264; J. Ricardo Garcèa and Kate Cain, "Decoding and Reading Comprehension: A Meta-Analysis to Identify Which Reader and Assessment Characteristics Influence the Strength of the Relationship in

English," *Review of Educational Research* 84, no. 1 (2014): 74–111, http://dx.doi.org/10.3102/0034654313499616; Frank R. Vellutino, William E. Tunmer, James J. Jaccard, and RuSan Chen, "Components of Reading Ability: Multivariate Evidence for a Convergent Skills Model of Reading Development," *Scientific Studies of Reading* 11 (2007): 3–32, http://dx.doi.org/10.1080/10888430709336632.

54 Note that we are not saying that instruction in higher-level reading comprehension strategies should be delayed until foundational reading skills are mastered, but rather that progress on foundational skills should continue to be monitored if there are comprehension problems, even for students in grade 5 and up.

55 Bennett and Gitomer, "Transforming K-12 Assessment."

56 McNamara, "Reading Comprehension Strategies"; Tenaha O'Reilly, Paul Deane, and John Sabatini, *Building and Sharing Knowledge Key Practice: What Do You Know, What Don't You Know, What Did You Learn?* (Research Report No. RR-15-24), (Princeton, NJ: Educational Testing Service, 2015), https://doi.org/10.1002/ets2.12074.

57 For an example on how learning and assessment can be integrated to support knowledge and comprehension development, see O'Reilly et al., *Building and Sharing Knowledge*.

58 McCarthy et al., "Comprehension"; John Sabatini, Laura Halderman, Tenaha O'Reilly, and Jonathan Weeks, "Assessing Comprehension in Kindergarten through Third Grade," *Topics in Language Disorders* 36, no. 4, 334–355, https://doi.org/10.1097/TLD.0000000000000104; John Sabatini, Tenaha O'Reilly, Laura Halderman, and Kelly Bruce, "Broadening the Scope of Reading Comprehension Using Scenario-Based Assessments: Preliminary Findings and Challenges," *L'Année Psychologique* 114 (2014): 693–723, http://dx.doi.org/10.4074/S0003503314004059.

59 Goldman et al., "Disciplinary Literacies and Learning"; LaRusso et al., "Contributions of Academic Language"; Sabatini, *Reading Literacy Assessment Framework.*

60 Goldman et al., "Disciplinary Literacies and Learning."

61 The term "relevant" can be defined in many ways, but some of the connotations intended here involve cultural relevance, familiarity, agency, and possibly usefulness. Susan R. Goldman, Catherine Snow, and Sharon Vaughn, "Common Themes in Teaching Reading for Understanding: Lessons from Three Projects," *Journal of Adolescent & Adult Literacy* 60, no. 3 (2016): 255–264, https://doi.org/10.1002/jaal.586.

62 Patricia A. Alexander, "Mapping the Multidimensional Nature of Domain Learning: The Interplay of Cognitive, Motivational, and Strategic Forces," in Advances in Motivation and Achievement (Vol. 10), eds. Martin L. Maehr and Paul R. Pintrich (Greenwich, CT: JAI Press Inc., 1997), 213–250; Patricia A. Alexander, "The Development of Expertise: The Journey from Acclimation to Proficiency," *Educational Researcher* 32, no. 8 (2003): 10–14," https://doi.org/10.3102/0013189X032008010; Patricia A. Alexander, Christopher T. Sperl, Michelle M. Buehl, Helenrose Fives, and Shuhui Chiu, "Modeling Domain Learning: Profiles from the Field of Special Education," *Journal of Educational Psychology* 96 (2004): 545–557, http://dx.doi.org/10.1037/0022-0663.96.3.545; K. Anders Ericsson and Walter Kintsch, "Long-Term Working Memory," *Psychological Review* 102 (1995): 211–245, http://dx.doi.org/10.1037/0033-295X.102.2.211; Walter Kintsch, "The Construction-Integration Model of Text Comprehension and Its Implications for Instruction," in *Theoretical Models and Processes of Reading (Vol. 5)*, eds. Robert B. Ruddell and Norman J. Unrau (Newark, DE: International Reading Association, Inc., 2004), 1270–1328; McNamara et al., "Comprehension Skill, Inference Making"; Shapiro, "How Including Prior Knowledge."

63 Paulina A. Kulesz, David J. Francis, Marcia A. Fletcher, and Jack M. Fletcher, "The Influence of Properties of the Test and Their Interactions with Reader Characteristics on Reading Comprehension: An Explanatory Item Response Study," *Journal of Educational Psychology* 108, no. 8 (2016): 1078–1097, https://doi.org/10.1037/edu0000126.

64 Preliminary research from our lab indicates that it is possible to construct a set of tasks that build toward a more complex goal while simultaneously providing some evidence for what students can and cannot do (Deane et al., "Scenario-Based Assessment").

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