## **Rethinking Reading**

Differentiating Comprehension from the Components of Reading



By Hugh W. Catts and Alan G. Kamhi

ow can this be?" This was the response of principal Jane Avery when she saw her school's most recent third-grade reading scores. Three years ago, she worked with her primary grade teachers to adopt and implement a new reading curriculum. This curriculum was based on the "science of reading" and included systematic and explicit instruction in phonics. Ms. Avery expected that the curriculum would lead to greatly improved scores on the state reading exam. She was shocked to see only a small improvement.

Ms. Avery is not alone in her expectations. Many others have seen the recent emphasis on the science of reading as the answer to America's "reading crisis." This view is highlighted by journalist Nicholas Kristof in his article, "Two-Thirds of Kids Struggle to Read, and We Know How to Fix It."<sup>1</sup> He argues that neuroscience and behavioral studies demonstrate that explicit instruction in phonics is critical for most children to learn to read, and that the limited inclusion of this instruction has led to a large portion of children performing below the proficient level on state and national assessments of reading.

Indeed, researchers have made significant progress in our understanding of how children learn to read, and this work is having an impact on education policy and practice. Grassroots efforts and other advocacy have led to the vast majority of states adopting policies designed to improve the reading outcomes of all children, including those who struggle to read.<sup>2</sup> Whereas these policies consider various aspects of reading, much of their emphasis has been on developing word reading accuracy and fluency through explicit instruction in phonics. Of course, word reading is critical to reading achievement, but reading involves much more than recognizing the words on the page. Students must also comprehend what they read. Research within the science of reading has investigated what is involved in comprehension and how children learn to understand what they read. Some of the findings from this research have been incorporated into educational policy, but not all that is known from research has been implemented in the classroom or included in public policy.

Many educators view comprehension as a component of reading and one of the pillars of reading instruction. This view is an outgrowth of the report from the National Reading Panel (NRP).<sup>3</sup> This panel was commissioned by Congress in 1998 to examine research on reading instruction. Initially, the panel divided this

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research into work on alphabetics, fluency, and comprehension. In the report, alphabetics was further divided into phonological awareness and phonics, and comprehension was divided into vocabulary and text comprehension. Over time, these components, along with fluency, became known as the *big five* or the *five pillars* of reading instruction. Today, much of reading instruction in the United States is guided by this component model of reading. In fact, a recent report by the Albert Shanker Institute on reading reform indicated that 34 states included reference to the five pillars of reading instruction in their state legislation.<sup>4</sup>

Whereas the component model proved to be useful for reviewing research in the NRP report, it has significant limitations for guiding instruction. One limitation is that it can give the impression that the five components are independent and can be taught individually. This was not the intent of the NRP. The panel divided research into the individual components to examine whether each component contributed to learning to read independent of the others. In practice, however, the components are generally best taught together in an integrated fashion. That is, phonological awareness is best taught in the context of phonics, and vocabulary in the context of comprehending a text.

A more significant limitation is that including comprehension (and vocabulary) along with other components gives the impression that comprehension is skill based and similar in complexity and malleability to the other components. The model also implies that like phonics, comprehension can be explicitly taught, and once acquired, can be applied to all texts. But comprehension is not a skill or set of skills; rather, it is a complex multidimensional ability. In fact, reading comprehension is one of the most complex activities that we engage in on a regular basis, and our ability to do so is dependent upon a wide range of knowledge and skills.<sup>5</sup> These include relevant background knowledge and reasoning abilities. Also, like listening comprehension, it is dependent on well-developed language abilities, including not only vocabulary knowledge but also an understanding of grammar and text-level structures (e.g., pronoun referencing and story structure). In addition, it is influenced by the nature of the text being read (e.g., its topic, complexity, and cohesion) and the purpose of reading (e.g., to study for a test or evaluate an opinion piece). Finally, it is acquired not in a few short years, but over one's lifetime. For these reasons, comprehension needs to be differentiated from skill-based components of reading and treated as the complex behavior it is.

## **Redefining Reading**

The idea of differentiating comprehension from the other components of reading was suggested over 15 years ago by Alan Kamhi (the second author).<sup>6</sup> He argued that many assessments of reading conflated word reading accuracy and fluency with comprehension, which could lead to misconceptions about why children performed poorly on reading tests. Was it due to their inability to accurately or fluently read words, their inability to comprehend, or both? To address this problem, he argued that reading should be viewed narrowly as just word recognition. This narrow view of reading would include the components of phonological awareness, phonics, and fluency. Comprehension (and vocabulary) in this view is treated as a separate and distinct cognitive process and ability. In a companion article, Hugh Catts (the first author) argued that adopting a narrow view of reading leads to a broader view of comprehension, one that goes beyond skill-based notions and recognizes the similarity of reading and listening comprehension.<sup>7</sup>

In proposing and advocating for this narrow view, we had no expectations that it would be widely accepted by educators or policymakers because the skill-based approach to comprehension has long been entrenched in the research and educational communities. In recent years, however, there have been significant advancements in the science of how to teach and assess comprehension that are beginning to impact educational practices. At the forefront is the movement toward providing integrated comprehension and knowledge instruction within content-rich literacy curricula. In these curricula, which are often implemented during English language arts (ELA) class time, students are taught the appropriate strategies (i.e., ways of thinking), vocabulary, and language needed to understand texts on subject-specific topics drawn from science, history, and the arts as well as more traditional ELA content. This instruction is also combined with oral discussions, hands-on activities, and writing opportunities with the goal of facilitating literacy and increasing knowledge. This is similar to the broad view of comprehension that we had advocated for in our earlier papers.

## Knowledge lays the foundation for building our understanding of text and provides an anchor for holding new information in memory.

The focus on knowledge is important because of the critical role it plays in comprehension (both reading and listening comprehension).8 Knowledge lays the foundation for building our understanding of text (or speech) and provides an anchor for holding new information in memory. It also helps us determine the specific meanings of words in context (e.g., pitcher as person or object) and allows us to make inferences and fill in details that are not explicitly stated in the text. In addition, with increased knowledge, students tend to have more interest in a topic and to be more motivated to read about it.9 But despite the importance of knowledge, it has typically been neglected in comprehension instruction, which has focused primarily on teaching domaingeneral reading strategies and general vocabulary.<sup>10</sup> While this instruction has been shown to be effective in some controlled studies,11 educators have over-relied on it, and it has not led to expected improvement on state and national tests of reading. Why? These tests rely heavily on knowledge, so students with limited knowledge of the topics chosen by test developers are at a great disadvantage on these assessments.12

Researchers who have recognized the importance of knowledge have begun to examine the effectiveness of content-rich



literacy instruction in the classroom.<sup>13</sup> Systematic reviews of this research show that content-rich literacy programs successfully increase vocabulary and content knowledge, as well as performance on standardized tests of reading comprehension.14 In response to this research and related advocacy, commercial ELA content-rich literacy programs (e.g., Core Knowledge Language Arts and EL Education) are being adopted in schools across the country.\* These programs teach literacy within units focused on various content areas. They also include word reading instruction or supplement their programs with standalone word reading programs. Whereas these ELA programs teach a variety of topics in science and social studies, they are not considered to be a substitute for science, social studies, or other disciplinary instruction that is intended for content blocks. Also, it is not uncommon for a publisher to offer both an ELA content-rich literacy program and fully developed disciplinary instruction in science and/or social studies. Unfortunately, there is typically not enough time in the school day for both, and disciplinary instruction in content blocks is often left out of the primary grades in favor of ELA literacy curricula.15

Given these developments, one might ask why schools need both an ELA content-rich literacy curriculum and disciplinary instruction in content blocks. ELA content-rich literacy programs do systematically build knowledge in content areas, but because of their more limited scope, they cannot develop broad and deep knowledge bases over time as well as disciplinary instruction can. So, why not integrate literacy instruction within disciplinary instructional blocks? Although it would be a major conceptual shift for our nation's elementary schools and would require a complete revamping of curricula, teacher preparation, and professional development, this seems feasible in the primary grades where the same teacher is responsible for both disciplinary and ELA instruction. It would also provide more time in the school day for disciplinary instruction that has been reduced to accommodate ELA instruction.

Integrating comprehension within disciplinary instruction would actually give attention to the primary purpose of comprehension in schools, which is learning. Taking a content-based approach to comprehension instruction allows the teacher to focus on knowledge acquisition using teacher-directed and student-driven discourse, multimedia presentations, and written materials, all of which involve comprehension. Children would still be taught how to best understand what they read, but this would be done in the context of learning. Of course, the purpose of reading in school goes beyond knowledge acquisition and includes learning to enjoy and appreciate literature. But there is no reason to think that comprehension could not be taught purposively in such a context as well, especially if children's literature were carved out as its own discipline.

James Kim, director of the READS Lab at Harvard University, and his colleagues have recently provided some support for this learning-based approach to comprehension instruction. They developed a content-rich literacy curriculum, Model of Reading Engagement (MORE), that was initially implemented within ELA in the primary grades. But subsequently they moved to delivering their curriculum within the supplemental science and social studies content blocks with the intent to both improve literacy and build domain knowledge and vocabulary across grades. They view knowledge as a tree in which different branches represent different aspects of knowledge, each involving increasingly focused topics. Their curriculum is designed to lay a foundation of knowledge (e.g., scientific study of the natural world) and then transfer this knowledge to more specific but thematically related topics (e.g., how paleontologists study the fossils of dinosaurs and their extinction) in subsequent lessons. In doing so, vocabulary learned in one unit builds on that from previous units and supports vocabulary in future units. In a recent study, approximately 2,800 children in grades 1-3 across 30 elementary schools in North Carolina received the MORE curriculum.<sup>16</sup> Results showed that the children participating in the MORE curriculum outperformed a control group on science vocabulary across grades and at the end of grade 3 demonstrated significantly better reading comprehension on science texts and on the state's standardized reading test (which has texts on a variety of topics). Furthermore, gains on the state's standardized reading test were sustained through the end of grade 4 (which was the highest grade assessed in this study).

## Assessing Comprehension

Separating comprehension from the other components of reading (alphabetics and fluency) also has relevance for the assessment of reading. Differentiating assessment of word reading and comprehension was one of the primary reasons for introducing the narrow view of reading in the first place. Since *reading* may refer to one's ability to recognize or decode words or one's understanding of printed texts, it can be especially confusing to interpret students' poor performance on high-stakes reading tests that assess word recognition and reading comprehension. Poor performance could be due to difficulties in word recognition, comprehension, or both. Even if educators do not embrace the narrow view of reading, it is essential that their reading assessments differentiate word reading and comprehension. This differentiation is necessary for providing effective instruction and intervention based on their students' specific word recognition and comprehension abilities.

Reliable and valid tests of word reading (and phonological awareness) are widely available. These can also be supplemented with standardized oral reading fluency measures. Educators and policymakers in other countries have gone further and mandated tests of word reading for early identification of difficulties. For example, educators in the United Kingdom and Australia use the "phonics screening check," a brief assessment of decoding skills using pseudo-words. Students who do not perform well on this screening are provided with additional support and instruction to

<sup>\*</sup>The Knowledge Matters Campaign offers details on content-rich curricula at knowledgematterscampaign.org/explore-curricula.

improve their decoding skills. Given the decentralized education system in the United States, it is unlikely that a specific assessment of pseudo-word reading could be instituted widely in this country. But progress monitoring tools of word decoding, sight word reading, and oral reading fluency are widely available and in frequent use. Careful attention to the results of these measures, along with those from standardized assessments, could identify students who have problems in alphabetics and/or word reading fluency alone or in combination with difficulties in comprehension.

Because of its complexity, assessing comprehension is a much more difficult task than measuring word reading. There are numerous standardized tests of reading comprehension-and these assessments can lead to very different scores for the same student. For example, one study showed that, on average, students scoring below the 10th percentile on one comprehension measure had only a 43 percent chance of being below the 10th percentile on each of three other comprehension measures.17 Whereas this finding is likely the result of a number of factors, it is at least partially due to the domain-specific nature of comprehension. That is, these tests contain passages on various topics, and one's knowledge of these topics can have a significant impact on one's comprehension. If a child knows a lot about a specific topic, such as trains, and very little about another topic, such as sloths, then that child's reading comprehension will be better with texts on trains than with texts on sloths. As a result, it is difficult to reduce comprehension to a single score because it is not a single ability-it's a domain-specific ability.

Concerns surrounding knowledge have led to the proposal that comprehension is best assessed in the context of content that has been taught. This approach has been implemented in a small number of districts in Louisiana as part of the Every Student Succeeds Act assessment pilot program. This program allows states, with approval by the US Department of Education, to pilot new and innovative assessments in lieu of current state exams. In these Louisiana districts, a multiyear pilot project uses a new humanities assessment that draws from texts and topics that are included in the state's recommended curriculum.18 The assessments measure what students have learned about humanities as well as how proficient they are in reading and writing about the topic.<sup>19</sup> Unfortunately, the program was interrupted by the pandemic and progress has been slowed further by limited adoption beyond the initial districts. A primary reason for the limited adoption is districts' unwillingness to participate in a project that only involves selected grades.20

Despite the implementation challenges, there are significant advantages of content-aligned assessments of reading comprehension over traditional domain-general assessments. Primary among these is that students are given the opportunity to acquire relevant background knowledge prior to assessment. This is particularly important for disadvantaged students who often lack the knowledge required by high-stakes reading assessments. Teachers also benefit because they can embed specific curricular content into their literacy instruction—and they can prepare students for the test by teaching important academic content, not drilling children in test prep. An assessment that is matched to the curriculum also places direct attention on learning. Students have the opportunity to learn from content-rich curricula and to be assessed based on what they have learned. This is obviously much better than being tested with *domain-general* measures of comprehension (i.e., texts on a wide variety of unpredictable topics) that don't necessarily assess the content that is actually taught in the classroom.

In conclusion, one might ask: Would students perform better on high-stakes tests of reading if we differentiated comprehension from other skill-based aspects of reading, taught it in content-rich curricula, and assessed it in content-aligned assessments? As mentioned above, there is a growing body of evidence showing that content-rich literacy instruction leads to improved performance on standardized tests of comprehension. But is this what we really want to know? Should we not be asking how much students have learned about science, social studies, and other subjects from what they read and how well can they write and talk about this knowl-

edge? If we could show strong performance on such measures, wouldn't our current high-stakes reading tests be irrelevant?



Content-rich literacy programs increase vocabulary and knowledge, as well as performance on standardized tests of reading comprehension.

We recognize that widespread replacement of domaingeneral high-stakes assessments of comprehension with content-aligned assessments is unlikely to happen in the near future. There are many significant challenges to overcome, including the effort and expense of creating assessments that are aligned with various content areas across multiple grades. As was discovered in Louisiana, this is difficult to do even one grade at a time. Content-aligned assessments would also need to accommodate flexibility in curricular choice, either by using publisher-designed assessments specifically aligned with the curriculum or by having educators create assessments that match the content taught in the classroom. In addition, new regulations or mandates would need to be enacted at the state and federal levels to allow for the adoption of content-aligned assessments. While successfully meeting these challenges in the near future seems quite unlikely, we are hopeful that a growing number of administrators and educators will recognize the limitations of high-stakes assessments of reading that conflate word reading with comprehension, and that this recognition will cause them to place more value on content-aligned measures of reading and learning. If this occurs, educators like Ms. Avery should be pleasantly surprised by how well their students are learning from what they read. 

For the endnotes, see aft.org/ae/winter2024-2025/catts\_kamhi.