



Research Base for
i-Ready Personalized
Instruction for Reading

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Executive Summary

Research and expert opinion provide a sound basis for reading instruction that addresses phonological awareness, phonics, automatic recognition of high-frequency words, vocabulary development, and development of reading comprehension skills and strategies.

Phonological Awareness. Phonological awareness is the ability to attend to the sounds of language and has two levels: phonological sensitivity (awareness of the larger segments of sound) and phonemic awareness (awareness of the individual phonemes in spoken words) (Brady, 2012; National Research Council, 1998).

Research suggests that phonological awareness instruction should progress from larger to smaller units of sound (Adams, 1990; Goswami & Bryant, 2016; Stahl, 1990). When focusing on phonemes, evidence supports instruction that stresses sound blending and segmenting activities, encourages students to playfully manipulate sounds, and links phonemic awareness instruction to phonics instruction (Foorman, Beyer, Borradaile, Coyne, Denton, Dimino . . . & Wissel, 2016; NELP, 2008; NICHD, 2000; Schuele & Boudreau, 2008; Yeh, 2003; Yopp & Yopp, 2009).

Phonics. Phonics instruction focuses on the acquisition of the correspondences between sounds and letters and sounds and letter combinations in order to prepare students for decoding and encoding words.

Research supports systematic and explicit phonics instruction, including teaching the blending of letter-sounds into words, segmenting words into component letter-sounds, focusing on larger subunits of words, decoding, and encoding (Camilli, Wolfe, & Smith, 2006; Foorman et al., 2016; NICHD, 2000; Weiser & Mathes, 2011). Researchers recommend integrating instruction on these foundational literacy skills with opportunities for students to read meaningful, connected text (Adams, 1990; Brady, 2012; Dehaene, 2009; Moats, 2012; NICHD, 2000; Strickland, 2011).

High-Frequency Words and word recognition. Experts in reading instruction recommend that children just learning to read should develop instantaneous decoding of high-frequency words (Dolch, 1936; Fry, 1980; Graves, 2016; Kamil & Hiebert, 2005; Zeno, Ivins, Millard, & Bi Duvvuri, 1995). Research suggests that repeated exposure and word review builds automaticity with high-frequency words, so early readers need to invest little effort on decoding individual words and can focus their attention on comprehension (Logan, 1997; Samuels & Flor, 1997). Sight word instruction should first focus on words in isolation to develop automaticity and then progress to identifying sight words in context (Konza, 2010).

Vocabulary development. Research strongly suggests that instruction focused on vocabulary development is critical to learning to read with comprehension (NICHD, 2000; Rasinski, Padak, Newton, & Newton, 2011). Research-based best practices include teaching high-utility words, introducing words in rich and multiple contexts, providing explicit instruction in word meaning, teaching word-learning strategies grounded in morphology, and teaching context clues, with an emphasis on multiple-meaning words (Baumann, Edwards, Boland, & Font, 2012; Beck, McKeown, & Kucan, 2013; Biemiller, 2011; Butler, Urrutia, Buenger, Gonzalez, Hunt, & Eisenhart, 2010; Graves & Silverman, 2011; Lehr, Osborn, & Hiebert, 2004; Logan & Kieffer, 2017; Nelson & Stage, 2007; NICHD, 2000; Rasinski et al., 2011). Research also supports an emphasis on vocabulary instruction for English Learners (ELs) (Rasinski et al., 2011).

Reading comprehension instruction. Research and expert opinion on reading comprehension instruction support careful selection of the texts students will read. Evidence-based best practices regarding text selection include choosing texts that are at an appropriate level of complexity, giving students experience with multiple text genres (both fiction and nonfiction), and selecting high-interest texts that will motivate students to read (ACT, 2006; CCSSO, 2017; Robertson, Dougherty, Ford-Connors, & Paratore, 2014; Roskos & Neuman, 2014).

Research-supported features of reading comprehension instruction include having students spend more time engaging with text and less time on prereading activities, interspersing comprehension questions to help students focus on understanding each portion of the text as they first read it, and teaching multiple comprehension strategies, including rereading and the use of graphic organizers (Beck & McKeown, 2006; NICHHD, 2000; Roskos & Neuman, 2014; Shanahan, 2013).

Research-based strategies for using technology to enhance reading comprehension instruction include building in instructional feedback and other adaptive scaffolding support and incorporating features to prevent mind wandering (Molenaar & Roda, 2008; Shanahan, 2013; Smallwood & Schooler, 2014).

How *i-Ready Personalized Instruction* aligns with the research. The *i-Ready Diagnostic* is an adaptive assessment that places students into lessons at their zone of proximal development. Based on the assessment, teachers are able to see students' "Can Dos" and "Next Steps," see groups of students with similar needs, and access teacher-led Tools for Instruction to provide small group instruction. In addition to supporting teacher-led instruction, *i-Ready* automatically places students into online lessons—in *i-Ready Personalized Instruction*—that are right for them. *i-Ready Personalized Instruction* includes reading instruction and practice in Phonological Awareness, Phonics, High-Frequency Words, Vocabulary, and Comprehension. Lessons focused on each of these domains are designed to reflect the research and expert opinion summarized above to ensure students learn to read with fluency and understanding.

- **Phonological Awareness (PA).** *i-Ready* PA lessons for Grades K–1 reflect the strong research evidence of the benefits of having children learn phonemic awareness by progressing from larger to smaller units of sound. *i-Ready* also aligns with research-supported PA instructional best practices, including teaching students to blend and segment phonemes, engaging students with opportunities for playful manipulation of sound, and linking *i-Ready* PA instruction to *i-Ready* Phonics instruction.
- **Phonics.** *i-Ready* Phonics lessons for Grades K–3 reflect research-based recommendations to provide explicit, interactive instruction and practice in a systematic, sequential skill progression. These lessons help students master the correspondences between sounds and individual letters and between sounds and letter combinations. Students also receive instruction and practice with word patterns, word parts, and syllabication. Each lesson culminates with an opportunity to apply phonics skills in the context of engaging connected text.
- **High-Frequency Words (HFW).** *i-Ready's* HFW lessons for Grades K–2 start by introducing and providing practice with a focused set of HFW in isolation—HFW selected from research-based word lists. As needed, *i-Ready* follows the research-based strategy of providing students with instructional scaffolding and practice to build automaticity with the target words in isolation. Students also practice identifying these HFW in sentences and longer texts to further develop automaticity in the context of reading. Repeated exposure to and practice with the selected HFW help build students' ability to recognize these important words instantly and automatically.

- **Vocabulary.** *i-Ready* includes vocabulary instruction across Grades K–8, as supported by decades of research. At Grades K–2, *i-Ready* Vocabulary lessons focus primarily on a select set of high-utility, academic words that students will encounter in a variety of text types and content areas. These lessons present selected words in context, provide modeled instruction for each word, and provide ample practice using each word in multiple contexts. *i-Ready* Vocabulary lessons for Grades 3 and above focus primarily on teaching multiple strategies students can use to unlock the meaning of many unknown words by applying their knowledge of morphology and/or context clues.
- **Comprehension.** *i-Ready* Comprehension lessons reflect current research and expert recommendations by featuring carefully selected complex, engaging, and rigorous texts, including many culturally responsive texts, making text central to the learning experience while minimizing time spent on prereading activities, interspersing comprehension questions to help students establish meaning while reading a text, teaching multiple comprehension strategies, and providing technology-enhanced individualized scaffolds as needed to support and motivate each reader and prevent mind wandering.

Introduction

The ability to read with comprehension is critical to success in school and beyond (ETS & CCSSO, 2018), yet many students lack sufficient reading skill for such success. The National Assessment of Educational Progress (NAEP) determined that only about one-third of fourth and eighth grade (34%) students performed at or above the “Proficient” level in reading in 2019 (NAEP, 2019). Of the high school graduates who took the ACT exam in 2019, just under half (45%) did not meet ACT’s college benchmarks for reading (ACT, 2019).

The good news is that decades of research on reading instruction provide a solid foundation of practices that help students gain proficiency in reading. Instruction that supports teachers in translating research and expert recommendations into practice can help educators make significant headway in improving reading proficiency for all students.

i-Ready: Connecting Research to Practice

i-Ready combines diagnostic assessment, engaging online lessons, reporting tools, and downloadable resources for classroom instruction to support teachers in providing differentiated instruction that meets the needs of each learner.

The *i-Ready Diagnostic* is an adaptive assessment that offers a detailed picture of student performance and growth across the school year, while also providing teachers with actionable insight into student needs. By assessing a broad range of skills and adapting the assessment items to student responses, *i-Ready Diagnostic* pinpoints each student’s ability level, identifies the specific skills each student needs to learn in order to accelerate growth, and delivers a personalized learning path of online instructional lessons to help students reach grade-level proficiency and beyond.

All students receive an individual path of online lessons in *i-Ready Personalized Instruction* based on the data from the *i-Ready Diagnostic*. Students receive explicit literacy instruction, systematic practice, and scaffolded feedback that encourages them as they develop new skills. Lessons are tested extensively with younger students and older struggling learners, ensuring that *i-Ready Personalized Instruction* is engaging and effective for students of all abilities and ages, and instructional reports allow teachers to monitor how students are responding to this instruction and point them to downloadable lesson plans and other instructional resources (e.g., Tools for Instruction) they can use for remediation, reteaching, and enrichment.

The Reading lessons in *i-Ready Personalized Instruction* are designed to supplement classroom literacy instruction and bolster the skills of on-grade level, advanced, and struggling learners. Instruction focuses on a broad range of domains that research tells us is important in order to develop reading proficiency—Phonological Awareness, Phonics, High-Frequency Words, Vocabulary, and Comprehension. Lessons focused on each of these domains are designed to reflect research and expert opinion on effective reading instruction.

Research on *i-Ready* shows that it is an effective resource for accelerating student growth and progress toward reading proficiency, meeting Level 2 criteria for the Every Student Succeeds Act (ESSA). In a comprehensive study conducted by Curriculum Associates, *i-Ready Diagnostic* data from more than four million students indicated that on average, students across Grades K–8 using *i-Ready Personalized*

Instruction experienced score gains in English language arts (ELA) that were 39 percent greater than students who did not use *i-Ready Personalized Instruction*. Research also evaluated the impact for subgroups and found similar results, with non-Caucasian students, students with disabilities, students with socioeconomic disadvantages, and ELs who received *i-Ready Personalized Instruction* demonstrating greater gains in ELA than students in these subgroups who did not receive *i-Ready Personalized Instruction*. These results indicate that *i-Ready Personalized Instruction* is an effective system for accelerating student growth and progress toward reading proficiency.

Curriculum Associates notes that *i-Ready's* effectiveness is due, in part, to its research-based design. This paper presents research and expert opinion on several aspects of effective reading instruction, and it explains how *i-Ready Personalized Instruction* aligns to this research.

Research on Phonological Awareness

Phonological Awareness (PA) is the ability to attend to the sounds of language, as distinct from its meaning (NRC, 1998). PA has two levels: (1) phonological sensitivity, meaning a “conscious awareness of larger, more salient sound structures within words, including syllables and sub-syllabic elements (onsets and rimes)”; and (2) phonemic awareness, meaning explicit awareness of the individual phonemes—the distinct units of sound—that comprise spoken words (Brady, 2012).

Extensive research suggests that PA instruction should progress from larger to smaller units of sound. When focusing on phonemes, evidence supports an instructional approach that stresses sound blending and segmenting activities, which encourages students to playfully manipulate sounds and links phonemic awareness instruction to phonics instruction. These strategies effectively develop children’s awareness of the sound units of the English language.

Progress from Larger to Smaller Units of Sound

Research shows that PA occurs gradually over time as young children become aware of increasingly smaller units of sound (Adams, 1990; Stahl, 1990). In an extensive review of the research on the development of PA, Goswami and Bryant (2016) found substantial evidence confirming that children learn larger units of sound (larger than the phoneme) and that this learning should be accomplished first, followed by more formal instruction on phonemes. These researchers verified that there was a natural continuum of phonological ability in children that starts with word-level skills and is later followed by syllable, rime, and phoneme-level skills. While phonological units larger than the phoneme were evident in pre-reading in children across many languages, phonemic awareness seems to develop largely from instruction in reading (Goswami & Bryant, 2016).

Focus Primarily on Blending and Segmenting Phonemes

Putting sounds together to form words (i.e., blending) and breaking words apart into their component sounds (i.e., segmenting) are crucial prerequisite abilities for learning to read and spell. Children initially perceive words as whole units, as their focus is on word meaning. Only later do they learn that words are made up of individual phonemes. In order to learn these individual phonemes, children need many opportunities to practice blending and segmenting sounds.

In an extensive review of more than 150 studies on the development of PA, Schuele and Boudreau (2008) confirmed that early instruction focused on blending and segmenting phonemes is critical for developing children’s reading and spelling skills. These researchers further concluded that instruction in blending and segmenting sounds is an especially important intervention for low-literacy students, noting that it is essential for such PA intervention to continue until proficiency is gained in blending and segmenting phonemes. They warn that intervention limited to only “shallow-level tasks of phonological awareness” such as rhyming is insufficient (Schuele & Boudreau, 2008).

Research by Yeh (2003) confirms that learning to blend and segment sounds provides young children with an advantage in developing their phonemic awareness, compared to alternative strategies such as relying on rhyming and alliteration.

Provide Opportunities for Manipulating and Playing with Segments of Sounds

Researchers recommend that students be encouraged to manipulate and play with segments of sounds through a variety of activities. Word building and other opportunities to manipulate sounds provide engagement and support the development of children's PA.

In a What Works Clearinghouse (WWC) practice guide for teachers, Foorman, Beyler, Borradaile, Coyne, Denton, Dimino . . . and Wissel (2016) reviewed the "best available research" on supporting foundational skills in reading and consulted with a panel of literacy experts. The researchers offered four overarching recommendations, including one addressing phonemic awareness: "Develop awareness of the segments of sounds in speech and how they link to letters" (Foorman et al., 2016). To accomplish this objective, the researchers advised teachers to guide students to recognize and manipulate segments of sound in speech, and especially to use word-building activities to connect student understanding of letter-sound relationships with phonemic awareness (Foorman et al., 2016).

Play has long been established as an important component of learning and engagement for young children (NAEYC, n.d.). Experts studying the development of PA recommend that play be incorporated into such learning, stating: "Young children have a natural propensity to play with language, and the early years are an optimal time to foster and extend their explorations" (Yopp & Yopp, 2009).

Link Phonemic Awareness to Phonics Instruction

Linking phonemic awareness with explicit phonics instruction greatly improves the development of reading and spelling in young children. The National Reading Panel, after a comprehensive review of the research, concluded that teachers should begin by teaching phonemic awareness skills but then quickly link this instruction to learning letter-sounds. In their review, they found that instruction that taught children to manipulate phonemes using letters created effect sizes that were almost twice as large as instruction that taught children without letters. In follow-up tests, a similar effect size was found. Additionally, research showed that instruction incorporating use of letters benefited children's spelling more than instruction without letters, again with an effect size almost twice as great (NICHHD, 2000).¹

In a meta-analysis involving 275 studies, the National Early Literacy Panel (NELP) concluded that the effects of phonemic awareness training were enhanced when they were combined with the teaching of letter names and sounds or with simple phonics tasks. In their summary of findings, NELP (2008) concluded that while PA training can be done alone, there is likely an advantage when combining PA training with additional activities that focus on letter names, letter-sounds, and other "aspects of print."

¹Effect sizes in favor of instruction with letters for the three studies referenced were $d = .67$ vs. $.38$; $d = .59$ vs. $.36$; and $d = .61$ vs. $.34$, respectively.

How *i-Ready* Phonological Awareness Instruction Aligns to the Research

The Grades K–1 PA instruction in *i-Ready* was designed to reflect strong research evidence of the benefits of having children learn phonemic awareness by progressing from larger to smaller units of sound. *i-Ready* also aligns with research-supported PA instructional best practices for helping children learn to read, including:

- Teaching students to blend and segment phonemes
- Engaging students with opportunities for playful manipulation of sounds
- Linking *i-Ready* PA instruction to phonics instruction, ensuring that as students build their awareness of sounds, they are also growing their ability to recognize letter names and their sounds

For additional support, *i-Ready* provides downloadable PA lesson plans (i.e., Tools for Instruction) that can be used for teacher-led PA instruction.

i-Ready Supports Learning Phonemic Awareness by Progressing from Larger to Smaller Units of Sound

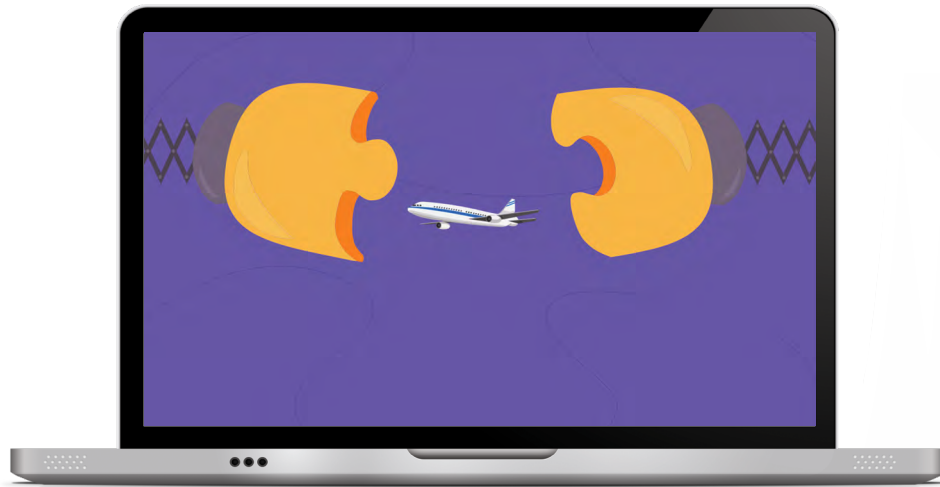
The *i-Ready* PA lessons move from the simplest concepts in early kindergarten to more complex concepts from early to mid-first grade. The kindergarten lessons begin by focusing on recognition of larger chunks of sound before progressing to recognition of smaller chunks of sound, while the Grade 1 lessons begin to prepare children for the more challenging phonics skills they will soon be learning. Throughout the lessons, students progress to finer and finer discriminations.

- The emerging and early kindergarten PA lessons start with rhyming and progress to blending and segmenting syllables. They then move on to blending and segmenting of onset and rime.
- After focusing on larger sound chunks in emerging and early kindergarten lessons, the instruction transitions to focusing primarily on individual phonemes. Students are first asked to identify sounds in the initial, final, and then medial position of words.
- Once students can isolate specific phonemes, they are asked to blend and segment words with two and three phonemes. In kindergarten lessons that come later in the *i-Ready* scope and sequence, students progress to blending and segmenting words with up to four sounds. In Grade 1 lessons, students continue to work on manipulating words that have two, three, and four sounds, learning to isolate, blend, and segment those sounds.
- Consonant blends and digraphs are introduced in Grade 1 to increase the challenge for students and to begin to expose them to the phonics skills they will be learning in the *i-Ready* Phonics lessons.

i-Ready Lessons Focus on Blending and Segmenting Phonemes

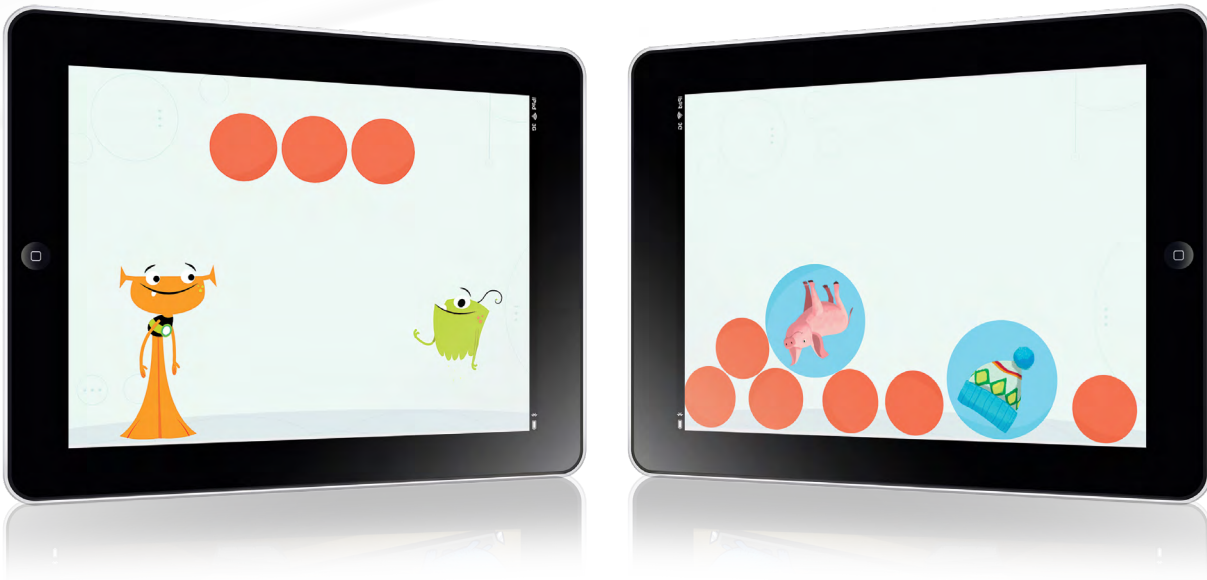
Research indicates that instruction in blending and segmenting phonemes is critical to helping children learn how to read and spell. The *i-Ready* PA scope and sequence was designed to reflect this research. The majority of lessons teach blending and segmenting phonemes.

In this lesson, students learn to blend syllables. Here, the puzzle pieces model the syllables “air-” and “-plane” coming together to form the word airplane.



i-Ready Provides Opportunities for Playful Exploration While Manipulating Sounds

To motivate and engage students and to take advantage of young children’s natural inclination to play with language, students are provided with time to explore freely at the beginning of each PA lesson. As they explore, children experiment with identifying, merging, dividing, and manipulating sounds in words. A typical lesson begins with friendly, supportive lesson characters explaining the task. Next, shapes that represent individual sounds appear on screen. In this exploratory part of the lesson, there are no correct or incorrect answers. Instead, students tap on the shapes to hear what sounds they make and discover how manipulating each shape changes its sound (e.g., blending word parts together, or taking words apart). The goal of this exploratory part of the lesson is to familiarize students with the word parts they will be working with later in the lesson. For example, in a lesson that focuses on syllables, students will start by playing with syllable sound shapes in the introduction.



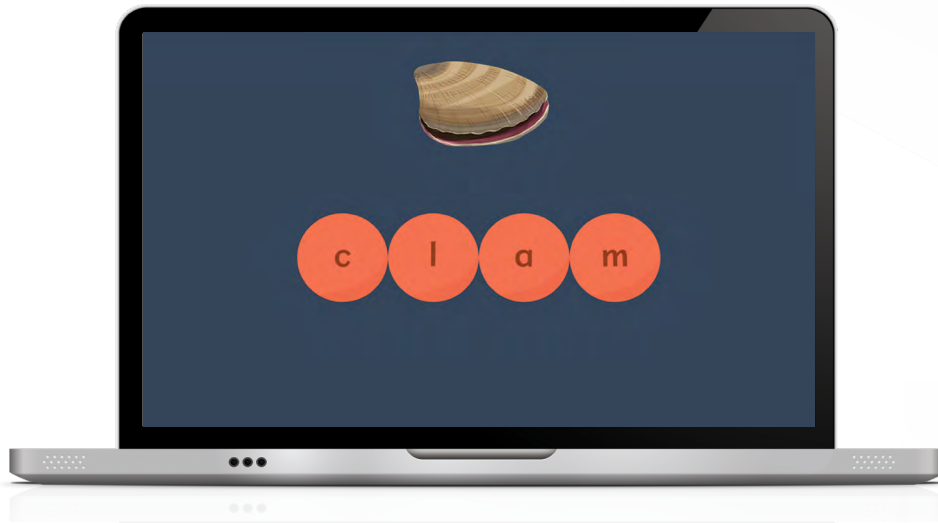
In this activity, Plory and Yoop model how sounds form words. Students then explore how sounds form words in an exploratory sandbox activity.

Following the exploration phase, children move through explicit instruction. First, a concept is introduced and modeled visually. Children learn to associate sounds with visuals, working with shapes that represent phonemes and other shapes with pictures inside of them that represent words. They use these shapes to practice blending, segmenting, or manipulating the sounds. Next, students build their confidence in guided activities that also feature the sound balls, receiving increasingly greater instructional support—but only if they need it. In the Lesson Quiz, students are assessed on the concept that is the focus of the lesson, using the same kind of activity they engaged in earlier in the lesson, but working independently this time.

i-Ready Links Phonemic Awareness Instruction to Phonics Instruction

In the *i-Ready* PA lessons, the greatest emphasis is on phonemic awareness to prepare students for the letter-sound relationships they will later learn in the Phonics lessons. As students build their awareness of sounds in the PA lessons, they are also supported in developing their ability to recognize letter names and associate sounds with letters. For example, PA lessons that focus on blending and segmenting in early through mid-kindergarten focus exclusively on the auditory process, while lessons from late kindergarten through mid-first grade begin to link sounds to letters, as reinforcement. This approach aligns with research supporting the importance of linking instruction in phonemic awareness to phonics instruction, and it provides children with the foundation they need to be successful once they begin to blend and segment written words in the Phonics lessons.

In the later lessons—in line with research—once students blend sounds, they see how those individual sounds connect back to letters.



Here are specific examples of the flow from *i-Ready* PA lessons to related *i-Ready* Phonics lessons:

By the end of early kindergarten, students are blending VC and CVC words in the PA lessons, using a limited set of phonemes. In the early kindergarten Phonics lessons that follow the PA lessons, here are specific examples of the flow from *i-Ready* PA lessons to related *i-Ready* Phonics lessons:

- In the early kindergarten Phonological Awareness lessons, students learn to isolate and pronounce consonant and vowel sounds in the initial, medial, and final position in words. Later, in the early kindergarten Phonics lessons, students learn letter-sound correspondences for these phonemes.
- In first grade, students are taught how to blend and segment consonant blends and digraphs in PA lessons, prior to being taught how to decode and encode words with those same patterns in the first grade Phonics lessons.

Research on Phonics Instruction

Phonics instruction is a critical component of reading instruction that focuses on the acquisition of letter-sound correspondences and their use in reading and spelling. It is essential to develop children’s understanding of the correspondences between sounds and letters, and between sounds and letter combinations, in order to prepare them for the more challenging task of decoding and encoding words.

Research supports the efficacy of phonics instruction that is systematic and explicit, including teaching the blending of letter-sounds into words, segmenting words into component letter-sounds, focusing on larger subunits of words, decoding, and encoding (Foorman, Beyer, Borradaile, Coyne, Denton, Dimino, . . . & Wissel, 2016; NICHD, 2000; Weiser & Mathes, 2011). Researchers recommend that teaching these foundational literacy skills is more beneficial when integrated with opportunities to read meaningful, connected text (Dehaene, 2009; Moats, 2012; Strickland, 2011).

Explicit and Systematic Phonics Instruction

The National Reading Panel (NRP), in their seminal meta-analysis and research synthesis, consistently called for phonics instruction that is both explicit and systematic, presenting strong evidence that such instruction is effective in teaching literacy skills (NICHD, 2000). The NRP explained that systematic and explicit approaches to phonics always include “a planned, sequential introduction of a set of phonic elements along with teaching and practice of those elements” and include “the identification of a full array of letter-sound correspondences” (NICHD, 2000).

Ehri (2003), in a widely cited paper that analyzed the findings of the NRP research synthesis, characterized phonics instruction as being systematic “when all the major grapheme-phoneme correspondences are taught and they are covered in a clearly defined sequence.” According to Archer and Hughes (2011), explicit instruction involves guiding students while they are learning by providing a rationale for learning a specific skill, explanations and examples of the new skill, and opportunities for practice with feedback until the student has achieved mastery.

In their meta-analysis of hundreds of studies², the NRP researchers concluded that explicit and systematic phonics instruction “makes a more significant contribution to children’s growth in reading than do alternative programs providing unsystematic or no phonics instruction” (NICHD, 2000). Reanalysis of the data on systematic phonics instruction that followed the NRP study has confirmed the original findings of the NRP—that systematic phonics instruction is essential to teaching children to read (Camilli, Wolfe, & Smith, 2006).

Specific Phonics Approaches and Combined Approaches

Synthetic phonics involves explicitly teaching students letter-sound correspondences and then blending the sounds to form words. Systematic synthetic phonics instruction was the most common type of program evaluated by the NRP (NICHD, 2000). The NRP determined that the synthetic phonics programs they reviewed produced a positive impact on children’s’ growth in reading, larger than the

²The NRP considered roughly 100,000 reading studies published since 1966 and another 10,000 published before that time. From this pool, the panel selected several hundred studies for its review and analysis (<https://www.nichd.nih.gov/research/supported/nrp>).

effect sizes of the other comparison interventions. Based on these findings, the NRP concluded that synthetic phonics instruction was an effective intervention.³

The NRP also found that reading programs that focused on larger subunits of words had positive effects⁴, and that combination programs—“a synthetic phonics program and a larger-units . . . program”—also produced positive results (NICHD, 2000).⁵

A WWC teacher practice guide that was developed by expert researchers and practitioners for the US Department of Education provides recommendations based on research conducted subsequent to the NRP report. They recommend teaching students to:

blend letter sounds and sound-spelling patterns from left to right within a word to produce a recognizable pronunciation . . . Start with simple consonant-vowel-consonant (CVC) words that are familiar to students. Demonstrate how to blend, and provide feedback as students begin to apply it independently. Then, as students show progress in learning the skill, gradually progress to longer words and words that are new to the students (Foorman et al., 2016).

Decoding and Encoding Instruction

Research suggests that it is essential for early readers to learn both decoding and encoding in order to become proficient readers and writers. Children need to understand sound-symbol connections by learning the visual-to-auditory relationship between letters and sounds in order to read words (i.e., decoding) and the auditory-to-visual relationship in order to write words (i.e., encoding).

In the WWC practice guide for teachers, Foorman et al. (2016) cited more than a dozen recent studies as strong evidence for teaching both decoding and encoding skills, and they recommended that instructors “[t]each students to decode words, analyze word parts, and write and recognize words” in Grades K–3.

In a synthesis of the research to date, Weiser and Mathes (2011) found that the development of encoding skills is especially beneficial for students who are at risk for literacy failure. Specific findings related to the development of encoding skills indicate that:

- Manipulating phoneme-grapheme correspondences enhances literacy performance.⁶
- There is a synergistic relationship in using encoding and decoding instruction.⁷
- There are long-term benefits from early encoding instruction.⁸

³Effect size of $d = .45$ across 39 synthetic phonics programs (NICHD, 2000). Note: Though the difference in growth between phonics interventions was not statistically significant, the NRP was able to confirm positive impact on growth for synthetic phonics programs.

⁴Effect size of $d = .34$ across 11 programs that emphasized larger subunits (NICHD, 2000).

⁵Effect size for the combined programs of $d = .42$.

⁶“The average pooled Cohen’s d effect size was .81 . . .” (Weiser & Mathes, 2011).

⁷“The average Cohen’s d effect size for measures of reading [were] .84 . . . and .60 . . . for spelling . . . researchers found that encoding instruction helped struggling spellers improve not only their spelling abilities, but also their word recognition, alphabetic decoding, fluency, and comprehension performances with an average Cohen’s d effect size of .84 . . .” (Weiser & Mathes, 2011).

⁸“When treatment students received early encoding interventions that included the manipulation and/or writing of grapheme-phoneme correspondences, they outperformed contrast students at follow-up assessments, even though these students did not receive any further encoding or decoding intervention . . . these follow-up assessments . . . had a pooled Cohen’s d effect size of .63 . . .” (Weiser & Mathes, 2011).

Integrate Reading of Meaningful, Connected Text

Seminal work by Adams (1990) stressed that systematic instruction in phonics is more effective for both struggling and more advanced readers when it is paired with the reading of meaningful, connected text. Ten years later, the NRP agreed, stating that emerging reading skills must be continuously applied to meaningful reading and writing activities (NICHHD, 2000). Other literacy research experts concur that teaching foundational reading skills should be integrated with opportunities to read meaningful connected text (Dehaene, 2009; Moats, 2012; Strickland, 2011).

Brady (2012) points to the growing body of evidence of the value of reading connected text in a review of the research connected to the development of the Common Core State Standards, which address foundational reading skills. She also provides instructional recommendations that stress the importance of reading connected text, saying, “Texts with a high proportion of decodable, familiar words (complemented by high-frequency words) enhance beginners’ reading acquisition” (Brady, 2012). The WWC confirms this and recommends beginning the daily reading of connected texts as soon as students can identify a few words (Foorman et al., 2016).



How *i-Ready* Phonics Instruction Aligns to the Research

The design of *i-Ready* Phonics lessons for Grades K–3 reflects the research summarized above about efficacious practices for phonics instruction. The lessons include explicit, interactive instruction and practice in a systematic, sequential skill progression that builds on students’ prior learning. Students grow their understanding of correspondences between sounds and individual letters and between sounds and letter combinations. Students also receive instruction and practice with word patterns, word parts, and syllabication as they acquire skills to read more and more words. This logical instructional path, combined with multiple research-based approaches and the use of connected texts, leads students toward fluency and comprehension.

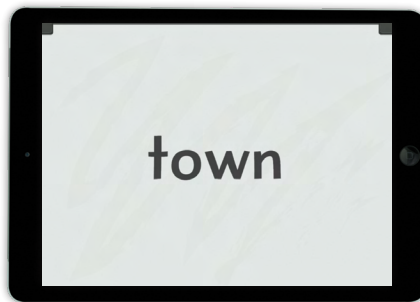
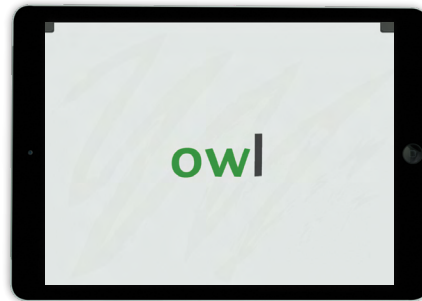
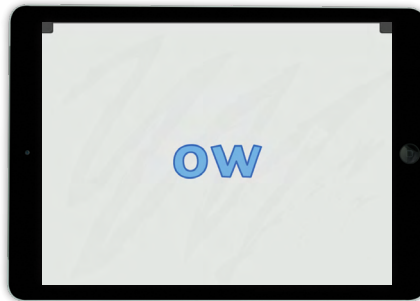
For additional support, *i-Ready* provides downloadable Phonics lesson plans (i.e., Tools for Instruction) that can be used for teacher-led phonics instruction.

i-Ready Provides Explicit and Systematic Phonics Instruction

i-Ready Phonics lessons provide explicit interactive instruction that focuses on discrete letter-sound relationships and strategies for blending sounds to decode words. Highly engaging practice activities feature friendly on-screen characters who provide instruction, informative feedback, and scaffolding to support students in learning to decode and encode words. Students also work with word patterns to develop their word-attack strategies. Additionally, students learn strategies that help them analyze syllables, inflectional endings, and morphemic elements in order to decode words with more than one syllable.

Systematic phonics instruction in *i-Ready* is structured according to a clear and logical progression that builds on students’ prior learning. For example, in early kindergarten, the lessons focus on the highest-utility consonants first, followed by commonly confused letters that sound similar or look similar. Once students have learned a small set of consonants, they are introduced to a short vowel sound and are guided to form words. Next, the cycle repeats, with new consonants and new short vowels. By late kindergarten, students start learning how to associate long vowel sounds with the simplest spelling patterns that represent them. Then in first grade, students learn final *-e* and common vowel combinations that represent long vowel sounds. By second grade, students will be reviewing short and long vowels for the same vowel, together.

In this lesson, students are introduced to the sound-spelling pattern **ow**. They then learn to decode words with this pattern.

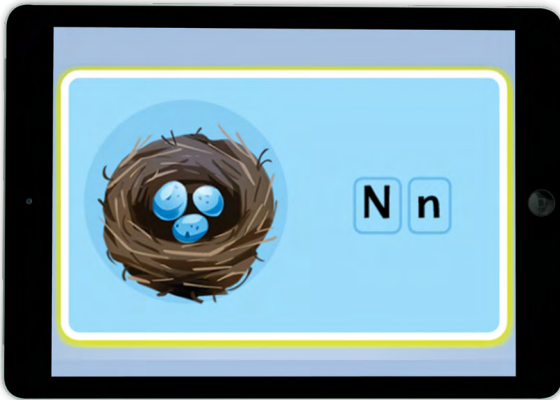


i-Ready Uses a Combination of Research-Based Approaches to Phonics Instruction

The Phonics lessons in *i-Ready* integrate multiple approaches to learning phonics, which is an effective way of teaching the subject, according to research (NICHD, 2000).

***i-Ready's* approaches include:**

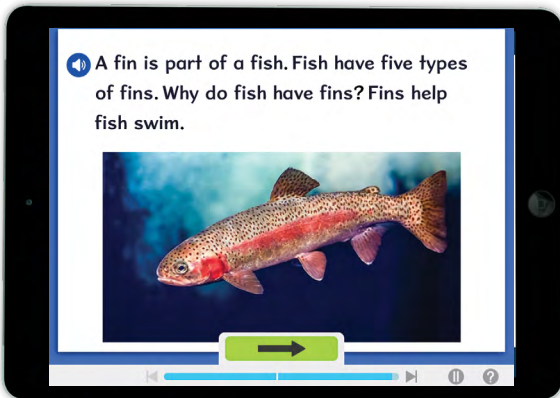
- **A primary focus on Synthetic Phonics**, with explicit instruction and practice activities focused on discrete letter-sound relationships and strategies for blending sounds and decoding words
- **Embedded Phonics**, using context sentences and highly decodable texts to give students practice in applying phonics knowledge to connected text and to help students make meaning of the words they are learning to decode
- **Analogy-Based Phonics**, with activities that help students learn how to use known word families, word parts, and word patterns to identify new words in playful word-building, sorting, and comparative activities
- **Analytic Phonics**, including practice in identifying phonetic patterns and distinguishing between different patterns



1

Synthetic Phonics: Explicit instruction and practice activities focus on discrete letter-sound relationships, strategies for blending sounds, and decoding words.

Left: Students earn Decoder Cards as they learn sound-spellings.



2

Embedded Phonics: Through context sentences and decodable texts, students practice applying their phonics knowledge as they read connected texts. Every *i-Ready* Phonics lesson provides opportunities for students to focus on the target skill in texts that help them make meaning of the words they're learning to decode.

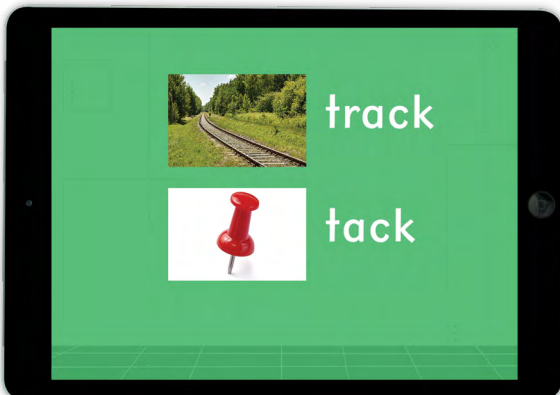
Left: This informational text is part of a Grade 1 i-Ready Phonics lesson.



3

Analogy-Based Phonics: Students learn to use known word families and word patterns to identify unknown words in playful word-building, sorting, and comparative activities.

Left: In this activity, students sort words by identifying which share the same target elements.



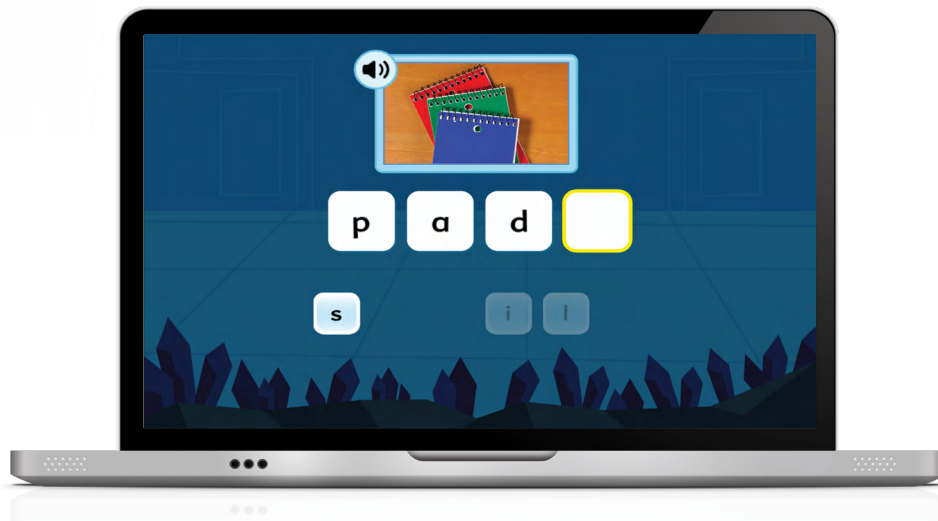
4

Analytic Phonics: Students see they can use known words (in this case *tack*) as analogies for figuring out new words.

i-Ready Incorporates Encoding Skills Practice

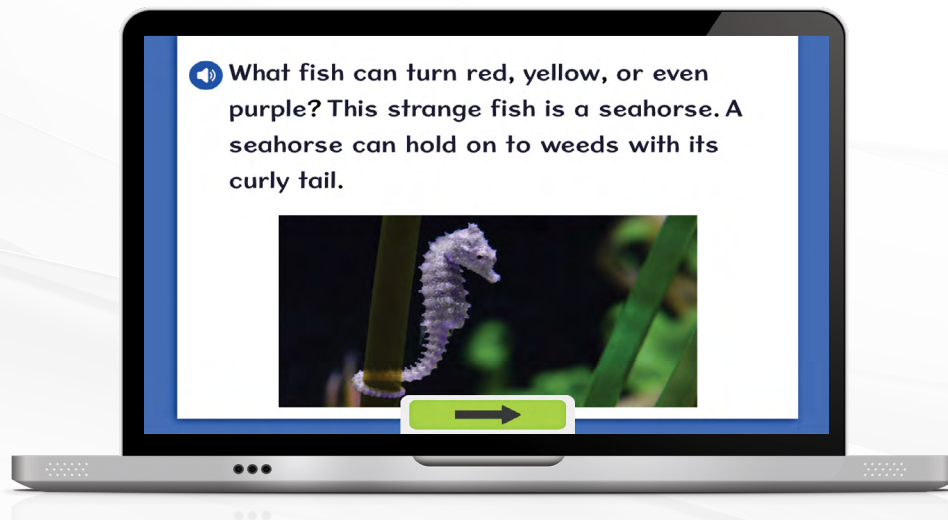
i-Ready Phonics lessons follow the research-based practice of integrating encoding instruction and practice into phonics instruction. Activities challenge students to first manipulate on-screen letter cards to spell words in isolation, then work with spelling patterns in the context of complete sentences (Weiser & Mathes, 2011).

Students spell the word *pads* in a lesson about words that end with *s*.



i-Ready Integrates Meaningful, Connected Text

In *i-Ready* Phonics lessons, instruction and practice are integrated with making meaning. Each lesson builds toward a concluding activity in which students apply phonics skills in the context of engaging connected text, followed by one or two comprehension questions.



By ending each lesson with a connected text, *i-Ready* contextualizes phonics skills and allows students to apply what they have learned and make meaning as they read. This follows researcher-recommended practices for effective phonics instruction (Adams, 1990; Brady, 2012; Dehaene, 2009; Foorman et al., 2016; Moats, 2012; NICHD, 2000; Strickland, 2011).



Research on High-Frequency Words and Word Recognition

When children are just learning to read, focusing on the most frequently encountered and most essential words provides them with a solid foundation. Once they are able to decode these high-frequency, essential words with ease, children can concentrate on learning to decode less frequent but more meaningful words. Research indicates that repeated exposure and word review builds automaticity so readers can begin to process text with little effort in order to focus attention on comprehension. While initial sight word instruction should focus on words in isolation to develop automaticity, once this is accomplished, it is essential for students to begin identifying sight words in context to further strengthen their reading skills.

Focus on the Most Frequent, Most Essential Words

Numerous high-frequency words (HFW) guides have been created by researchers over the past 80 years in order to identify the words that are most frequently encountered in text and are determined to be the most essential for children who are learning to read. Because a small number of frequently occurring words comprise such a large percentage of all words students need to learn to succeed in school, it is critical that students know these words well (Graves, 2016).

Among the word frequency guides most commonly relied on by teachers are the “Dolch 220 List” (1936) and the first 100 words from the “Instant Word List” developed and then updated by Fry (1980). A more recent research-based guide, the seminal *Educator’s Word Frequency Guide* (WFG Corpus), divides words by grade levels and uses an advanced methodology and larger collections of sampled text (Zeno, Ivens, Millard, & Duvvuri, 1995). The WFG Corpus also provides greater diversity by including representation of various cultural groups (Zeno et al., 1995). The *Educator’s Word Frequency Guide* includes a list of the top 300 words according to usage frequency, weighted by “dispersion across content areas based on the total [WFG] Corpus” (Zeno et al., 1995).

Dolch based his list of 220 words on three word-frequency compilations, and the selected words were determined to have the most value for students who are learning to read (Dolch, 1936). Fry’s empirically derived 1957 list was updated in 1980 based on research conducted by Carroll, Davies, and Richman (Fry, 1980), with some modifications made to the list to make it more useful for classroom teachers. Fry reported that the first 100 words of his list accounted for 50 percent of the words found in school reading materials (Fry, 1980). The first 5,000 words in the more recently developed WFG Corpus account for nearly 80 percent of the words used in kindergarten through the first year of college (Kamil & Hiebert, 2005).

Build Automaticity through Repeated Exposure and Word Review

Automaticity is the ability to “perform complex skills with minimal attention and conscious effort” (Samuels & Flor, 1997). The ability to recognize words automatically is essential for developing strong reading skills because the reader needs to learn to process text effortlessly and quickly in order

to focus attention on the higher order skills of comprehension and metacognition. Research has consistently shown that automaticity is essential for skill development generally, including reading development (Samuels & Flor, 1997; Bloom, 1986).

Beginning readers who have not yet developed automaticity are unable to exert sufficient attention on comprehending the text because their attention is focused on decoding the words in the text. A slow two-step process occurs involving decoding and then processing the text for meaning. For a reader who has developed automaticity, individual letters and parts of words no longer need to be processed—words are held in short-term memory and processed effortlessly (Samuels & Flor, 1997).

With practice and repeated exposure to words, students are able to develop automaticity and thus spend less cognitive effort and attention on decoding individual words. Research confirms that the route to attaining automaticity is via repeated exposure and practice (Samuels & Flor, 1997). More specifically, an extensive review of the research on automaticity in reading concluded that practice is essential, and mixing old and new materials results in greater acceleration of learning (Logan, 1997).

Expose Students to Words in Context

The ability to recognize words in context requires an understanding of the words conceptually and how words are related to one another within a text. It is different from rote memorization as well as from the development of automaticity of single words that are disconnected from any context. Being able to read and understand a word in the context of a meaningful text is vital to becoming an effective reader.

In a synthesis of the research on effective reading practices, Konza (2010) found that rote learning of individual words does not mean these words will be immediately recognized within a longer piece of text. She concluded that while initial instruction should not be within a connected text, once a sight word has been taught, students need to have opportunities to practice reading the word within larger high-quality texts (Konza, 2010).

How *i-Ready* HFW Instruction Aligns to the Research

i-Ready's HFW lessons start by introducing and providing practice with a focused set of HFW in isolation—HFW that have been selected from research-based word lists. For students who struggle to demonstrate automaticity with the target words in isolation, *i-Ready* delivers instructional scaffolding and practice. Students also practice identifying these HFW in sentences and longer texts to further develop automaticity, in the context of reading. Repeated exposure to and practice with the selected HFW helps build students' ability to recognize these important words instantly and automatically.

For additional support, *i-Ready* provides downloadable HFW lesson plans (i.e., Tools for Instruction) that can be used for teacher-led HFW instruction.

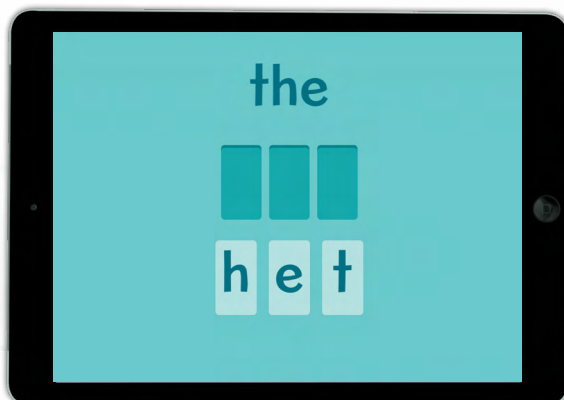
i-Ready Supports Learning HFW

i-Ready teaches approximately 150 of the most frequent, most essential words for young readers. Starting in Grades K–1, lessons focus on just more than 100 of the most frequent words from the WFG Corpus (Zeno et al., 1995). Then, in Grade 2, instruction proceeds to focus on approximately 40 HFW with complex or irregular spelling patterns, coming from the WFG Corpus, Fry (1980), and Dolch (1936).

i-Ready Builds Automaticity

i-Ready uses a five-step instructional routine to develop and/or strengthen students' automatic word recognition skills:

1. **See the word.** *i-Ready* lessons present each word to students.
2. **Say the word.** *i-Ready* lessons ask students to say each word aloud.
3. **Write the word.** Students follow along as each word is written on screen.
4. **Spell the word.** Students unscramble letters to spell each word.
5. **Check the word.** Students check each HFW they spelled.

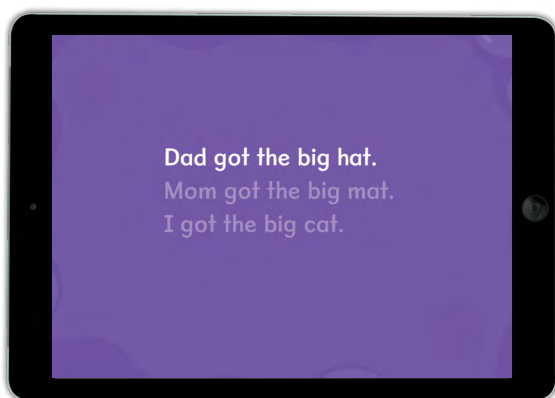


Step 4 of the five-step instructional routine to strengthen automatic word recognition skills.

There is a deliberate approach to expose students to words repeatedly in each *i-Ready* HFW lesson. In addition to the five-step method described above, students are exposed to each of the targeted words at least five more times within the lesson.

i-Ready Provides Experience with HFW in Context

After students have been taught targeted words and have practiced them in isolation, students encounter these words in context sentences to prepare for independent reading outside of *i-Ready*. Because these lessons focus on HFW, students are sure to encounter them repeatedly in other *i-Ready* lessons and in their independent reading.



After working with words in isolation, students work with the same words in context.

i-Ready Measures Each Student's Automaticity with HFW and Adjusts the Lesson Accordingly

Each *i-Ready* HFW lesson begins by evaluating which of the targeted words each student can already recognize automatically. The words are spoken and flash briefly on screen to test students' ability to recognize them instantly. Some of the words flashed are the target words, and some are close distractors to test students' ability to discern between words that are similar. Performance on this isolation activity determines what happens next:

- If students get all these items **correct**, then they've demonstrated automatic recognition of the target word and can skip instruction, progressing instead to an activity focused on recognizing that same target word in context.
- If students get one or more of the initial items **incorrect**, then they've demonstrated a need for support and appropriate instruction is provided. Instruction is focused on the target word in isolation, and after this instructional sequence, these students also progress to the context activity.

The context activity also has a differentiated approach. Three sentences appear on screen, each of which includes the target word. Students must scan each sentence to identify and tap the target word. If students **correctly** recognize the target word in all three sentences, they proceed to reading the sentences aloud, with the support of a friendly avatar. If students respond **incorrectly** to this

HFW-in-context challenge, they receive additional supportive instruction with the targeted word, first in isolation and then in context.

Upon completion of the context activity for the targeted HFW, students earn an on-screen badge for that word. Then they move back to the isolation activity for the very next HFW in the lesson. Once students have completed the isolation and context activities for all words in the lesson, they move on to the quiz.

In the quiz, students are assessed on their ability to instantly recognize the words they have been practicing in the lesson. In order to accurately measure automaticity, words flash on screen quickly, one at a time. If students can correctly identify the words after seeing them only briefly, then they have demonstrated automaticity and can progress to the next lesson. If students cannot correctly identify the words instantly, then they retake the lesson for additional exposure to the words. If a student fails to demonstrate automaticity during this second attempt, the teacher receives an alert that the student is struggling and needs additional support.

Research on Vocabulary Instruction

Word learning is a critical component of reading development. Research by the NRP confirmed that a student’s knowledge of the meaning of words is central to reading success (NICHD, 2000). Reviews of the research conclude that increasing the size and depth of a student’s vocabulary is linked to higher levels of reading comprehension (Rasinski, Padak, Newton, & Newton, 2011; Beck, Perfetti, & McKeown, 1982; Kame’enui, Carnine, & Freschi, 1982; Stahl & Fairbanks, 1986).

Research-based best practices in vocabulary instruction include teaching high-utility words, introducing words in rich and multiple contexts, explicitly instructing on word meaning, teaching word-learning strategies grounded in morphology, and teaching context clues with an emphasis on multiple-meaning words in order to improve reading comprehension. Research also supports an emphasis on vocabulary instruction for ELs.

Research on Vocabulary Instruction: Grades K–2

Teach Words That Students Most Need to Know

Researchers have divided words into three tiers in order to help teachers focus on teaching words that students most need to know. Tier 1 words are words that students frequently encounter in oral language and are thus likely to be known. Tier 2 words are words that appear in text across subject area domains, but are less likely to be familiar to students because they occur less commonly in conversation than in writing. Tier 3 words are words that are either rare or limited to one domain, such as subject-specific terms used exclusively in biology (Beck, McKeown, & Kucan, 2013).

Researchers recommend focusing on Tier 2 words for vocabulary instruction because these words are used often in multiple contexts, are suitable for learning in depth in connection to other words and concepts, and provide students with opportunities for understanding already familiar concepts with greater “specificity and precision” (Lehr, Osborn, & Hiebert, 2004). The focus on Tier 2 “high-utility academic words” is important because students encounter these words across academic subjects, and understanding them can support school-related reading comprehension and the ability to express oneself precisely in speaking and writing. Logan and Kieffer (2017) note that there are hundreds of thousands of words in the English lexicon, but by carefully focusing on learning vocabulary words that are going to be most useful in an academic context—namely Tier 2 vocabulary words—the task becomes manageable. Tier 2 words are widely accepted by researchers as being the most useful to teach (Logan & Kieffer, 2017; Vadasy, Sanders, & Logan Herrera, 2015; Proctor et al., 2011).

Introduce Words in Rich Contexts and Deepen Word Knowledge by Practicing Words in Multiple Contexts

Children benefit from learning new vocabulary words within rich contexts, such as texts focused on subject area content, rather than isolated word drills. Learning words in context can provide a deeper understanding of word meaning in relationship to the information and ideas presented in the text, compared to simple memorization of a word definition. Presenting new vocabulary in multiple contexts provides reinforcement for word learning.

The NRP, after its extensive review of the research, concluded that learning new vocabulary words within rich contexts greatly benefits children’s understanding of new words (NICHD, 2000). The NRP found that while direct vocabulary instruction is necessary, much of vocabulary learning needs to take place in the course of doing things other than explicit vocabulary learning. They advise: “Repetition [multiple exposure], richness of context, and motivation may . . . add to the efficacy of incidental learning of vocabulary” (NICHD, 2000).

In a review of the research on teaching new vocabulary words to students with and without disabilities, Biemiller (2011) recommended that direct instruction combined with using rich contexts was the most effective strategy.

Provide Explicit Instruction on Word Meaning

As noted above, the NRP found that direct vocabulary instruction is an important component of reading instruction (NICHD, 2000). Rich explicit instruction on word meaning can include a variety of activities such as explaining the meaning of a word, giving students examples of words in a variety of contexts, exploring words in the context of read-aloud stories, assisting students in selecting appropriate words, and asking children to provide their own examples of how to use words.

Building on the work of the NRP, Butler, Urrutia, Buenger, Gonzalez, Hunt, and Eisenhart (2010) synthesized experimental research on vocabulary instruction in the early elementary grades. They found “convergence” on several themes, including strong support for explicit instruction, frequent “exposure to targeted vocabulary,” and the use of “questioning strategies during a read-aloud.” Graves and Silverman (2011) reported that explicit instruction in the early grades results in children learning more words. Lehr, Osborn, and Hiebert (2004) found that explicit vocabulary instruction is essential for word learning for all students, and it is particularly important for struggling students who have not fully developed “the decoding and comprehension skills necessary for wide reading.”

As part of explicit instruction, providing brief definitions containing already familiar synonyms is an efficient and effective teaching method (Lehr et al., 2004; Graves & Silverman, 2011).

Research on Vocabulary Instruction: Grades 3–8

Teach Morphology

Teaching morphology involves helping students understand the meaning of unfamiliar words by using clues that are found within the structure of the word itself, including prefixes, suffixes, and word roots (Baumann, Edwards, Boland, & Font, 2012). In a selective review of the most important recent vocabulary-related research findings, Graves and Silverman (2011) found strong support for the connection between teaching morphological awareness and reading comprehension (Nagy, Berninger, Abbott, Vaughan, & Vermeulen, 2003; Deacon and Kirby, 2004).

More recently, Baumann et al. (2012) completed a review of five extensive research studies on the usefulness of morphemic analysis in helping students learn new words. They concluded that word-learning strategies that were focused on the meaning of prefixes, suffixes, and word roots, and how to use word-part knowledge when encountering unfamiliar words, were especially effective for helping students determine word meaning (Baumann et al., 2012; Baumann, Edwards, Boland, Olejnik, & Kameenui, 2003; Baumann, Edwards, Font, Tereshinski, Kameenui, & Olejnik, 2002; White, Sowell, & Yanagihara, 1989).

Rasinski et al. (2011) make a strong case for teaching Greek and Latin word roots so students can more efficiently learn multiple words rather than learning words one at a time. These researchers point out that most academic words in the sciences and in mathematics are derived from Latin and Greek words, that many challenging multisyllabic words are derived from Latin and Greek words, and that a single root or word pattern (affix) can be found in many English words. In their research review (2011), they found evidence that teaching Greek and Latin word roots can be effective in the elementary grades (Mountain, 2005; Porter-Collier, 2010). More specifically, Rasinski et al. (2011) cite research indicating that struggling readers benefit from learning Greek and Latin word roots to expand vocabulary development (Harmon, Hedrick, & Wood, 2005). They also found research that supports teaching Latin word roots as an effective way to transition Spanish-speaking ELs from Spanish to English vocabulary.

Because so many of these children speak first languages semantically embedded in the Latin lexicon (e.g., Spanish), enhancing this linguistic connection can accelerate students' vocabulary growth (Rasinski et al., 2011).

Teach Context Clues

Using context clues for vocabulary development involves inferring the meaning of an unfamiliar word by analyzing nearby words and looking closely at the structure and meaning of surrounding sentences (Baumann et al., 2012). In their research review, Graves and Silverman (2011) conclude that a substantial body of research supports combining contextual and definitional instruction, rather than relying solely on teaching word definitions, noting that the addition of contextual instruction “provides children with greater depth of knowledge.”

Research providing support for using context clues for vocabulary development is extensive (Graves & Silverman, 2011; Baumann et al., 2002; Buikema & Graves, 1993; Carnine, Kameenui, & Coyle, 1984; Patberg, Graves, & Stibbe, 1984). Notably, a meta-analysis of 21 studies examining instruction using context clues to derive word meaning found a noteworthy positive impact (Graves & Silverman, 2011).⁹ A 2012 research review reached a similar conclusion: teaching students to use “different types of linguistic context clues to infer word meaning (contextual analysis)” shows a positive impact on student vocabulary learning (Baumann et al., 2012).

Research has also shown gains in reading comprehension from context clue instruction focused on vocabulary words with multiple meanings, especially for low-achieving students (Nelson & Stage, 2007).¹⁰ Research further indicates that teaching students that words can have multiple meanings that fall into different categories (e.g., verbs, nouns, and adjectives), which can be understood by using contextual clues, results in positive effects on reading comprehension (Nelson & Stage, 2007; Biemiller, 1999; Chall & Dale, 1995; Dale & O'Rourke, 1981).

Research on Vocabulary Development for ELs

In an update to the 2007 *Educator's Practice Guide* for teaching literacy skills to ELs, the WWC put strong emphasis throughout their research-based recommendations on teaching students “academic vocabulary”—what Beck et al. (2002) and others define as Tier 2 words (Baker, Lascaux, Jayanthi, Dimino, Proctor, Morris, . . . & Newman-Gonchar, 2014).

⁹Effect size was .43.

¹⁰Effect sizes for students with low initial vocabulary and comprehension achievement in Grades 3 and 5 were .67 and .57, respectively. The effect sizes for students who were average- to high-achieving in Grades 3 and 5 were .46 and .08, respectively.

Research on EL students has established a strong link between vocabulary development and reading performance and provides support for focusing on academic vocabulary, teaching strategies for using information from morphology and context, and providing students with a variety of contexts and multiple meanings from which to learn new words—that is, instructional approaches that have been shown to benefit all students (Carlo, August, McLaughlin, Snow, Dressler, Lippman, . . . & White, 2004).

Graves and Silverman (2011) summarized the research on EL students and vocabulary development generally, and also found that EL students benefit from the same strategies used for English speakers. Other recommended strategies are EL-specific, such as showing children pictures and real objects that represent words and practicing pronouncing words on multiple occasions (Graves & Silverman, 2011; Gersten & Geva, 2003; Roberts & Neal, 2004).

How *i-Ready* Vocabulary Instruction Aligns to the Research

Grades K–2

Teach Words Students Most Need to Know

For Grades K–2, *i-Ready* Vocabulary lessons focus primarily on a select set of Tier 2 academic words and high-utility words that students will encounter in a variety of text types and across content areas. Targeted words also include some Tier 3 content area words that are broadly encountered within an academic subject area, as well as Tier 1 words to support ELs and students who struggle with reading.

The selected vocabulary was carefully chosen to align with multiple and seminal research-based lists that identify word frequency, developmentally appropriate words, and the most relevant general academic and content area vocabulary.

Introduce Words in Rich Contexts, Provide Explicit Instruction on Word Meaning, and Practice in Multiple Contexts

For Grades K–2, *i-Ready* Vocabulary lessons present selected words in context, provide modeled instruction for each word, and provide ample practice using each word in multiple contexts.

- **Words in Context:** In each *i-Ready* Vocabulary lesson for Grades K–2, a cluster of three to six words is introduced in the context of a brief literary or informational text. Each text explores a topic aligned to a science, social studies, mathematics, or English language arts curriculum. Thus, students learn words that support classroom learning, and they connect word knowledge to content knowledge.

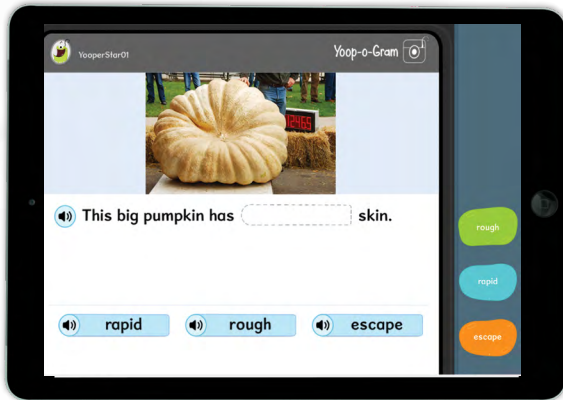


- **Modeled Instruction:** For each target word, the lesson provides a student-friendly definition and a familiar synonym, which connects the meaning of the vocabulary word to words students already know. Each word features a highly engaging, interactive animation that illustrates the word’s meaning in a relevant context that students are likely to remember. The animations are accompanied by example sentences that use the target words in context to reinforce meaning. Additionally, Spanish cognates are provided, when relevant.



- **Practice in Multiple Contexts:** After explicit instruction on the target words’ meanings, students deepen their word knowledge by completing a series of guided and independent practice activities that explore each word’s key concept (what it is or does), the contexts in which the word is used, and the word’s relationship to other words (e.g., synonyms, antonyms, shades of meaning). Activities include choosing the correct word to complete a context sentence, sorting words according to concept, indicating whether a sentence containing a target word makes sense, and matching vocabulary words to synonyms or antonyms.

For example, by the end of one lesson, students will understand that *rough* means “bumpy” or “uneven” and that it describes the way something feels (concept). They’ll learn that a cat’s tongue, a pumpkin’s skin, the bark of a tree trunk, and a road surface can all be rough (context), and that an antonym of *rough* is smooth.



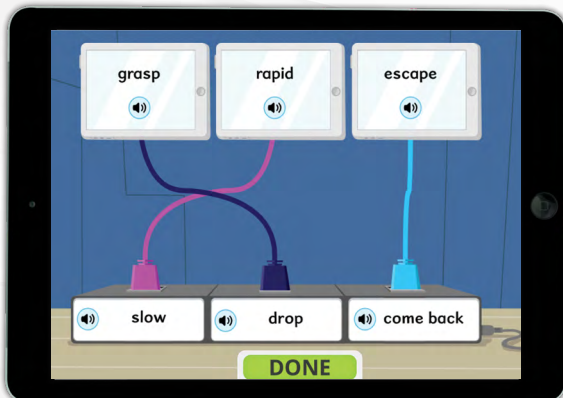
- **Sentence Completion:** The student must choose the correct target word to complete each sentence. (This activity practices using a word in context.)



- **Words in Context/Word Concept:** The student listens to a sentence containing a vocabulary word, then selects the thumbs up or thumbs down button to indicate if the usage makes sense. (This activity focuses on an aspect of the word's concept.)



- **Picture Sort:** A picture appears on screen, and the student has to drag it to the bin (each marked with a vocabulary word) that makes sense. (This activity practices using a word in context.)



- **Synonyms/Antonyms:** The student powers up tablets by connecting each one to its synonym or antonym (antonyms in this example). (This activity focuses on how a word relates to other words.)

Grades 3–8

i-Ready Vocabulary lessons for Grades 3 and above focus primarily on teaching multiple strategies students can use to unlock the meaning of many unknown words by applying their knowledge of morphology and/or context clues. On-demand support is provided for Spanish-speaking EL students.

Teach Morphology

Many Vocabulary lessons in *i-Ready* focus on morphology, including common Greek and Latin affixes, roots, and word families that are likely to be encountered broadly across content areas. In such lessons, students are guided to break apart a familiar word to “unlock” the meaning of a target word part. Then, they practice using their knowledge of the word part to analyze unknown words, build new words, and determine the meaning of unfamiliar words in context.

The image shows four tablet screens arranged in a 2x2 grid, connected by dotted blue arrows. The top-left screen displays the instruction "Break the word into its prefix and base word." with the word "semi • circle" and a vertical line between the two parts. The top-right screen asks "What is a 'semicircle'?" and lists four options: "a group of colored balls", "a group of round objects", "a small circle", and "a half circle". The bottom-left screen asks "Make a word that means 'happening every half year.'" and shows a grid of word parts: "multi" and "monthly" in the top row, "semi" and "annual" in the bottom row, with "semi" and "annual" highlighted in yellow. The bottom-right screen asks "Complete the sentence." and shows a sentence with a dropdown menu: "Anika had the fastest time at the semifinal swimming race. Because of that, she now moves on to the last round of competition." The word "semifinal" is selected in the dropdown.

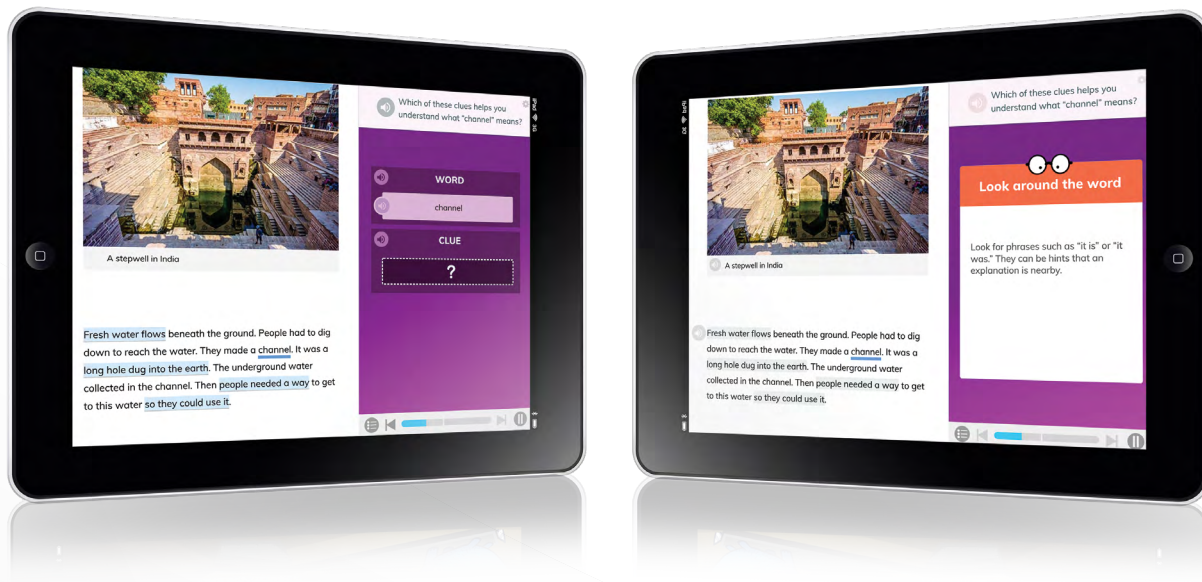
Teach Context Clues

i-Ready Vocabulary lessons that focus on context clues incorporate the target vocabulary words into short texts that hook readers and use the words in a natural way. The majority of these target words in the new Grades 3–5 lessons have multiple meanings, which requires students to use context to determine which meaning is intended. Other lessons focus on challenging single-meaning words that are likely to be unfamiliar to many students.

Instruction on a variety of clue types is provided at point of use in the text in the newer lessons and stored in “clue cards” that can be accessed in English or Spanish. Clue types include:

- Synonym/antonym clues
- Example clues
- General inference clues
- Definition or explanation clues
- Restatement clues

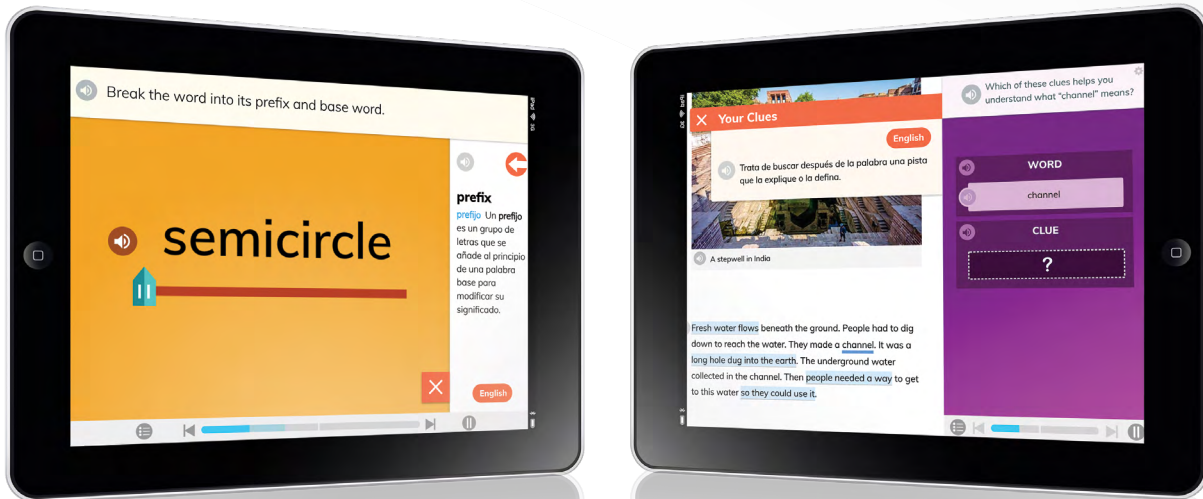
Consistent messaging about clue types is repeated within and across these lessons to encourage transfer of skills to students’ classroom and independent reading.



Provide Support for Spanish-Speaking ELs

Spanish-speaking ELs are supported in several ways in the new Grades 3–5 lessons:

- The morphology lessons that focus on Latin and Greek roots and word parts allow Spanish-speaking students to use knowledge of their home language to learn English.
- Affixes and roots that have the same spelling and meaning in Spanish and English are identified for students.
- Spanish translations are provided for the meanings of English affixes and roots.
- Base words and academic terms that are Spanish-English cognates are also identified for students, and definitions in Spanish are provided.
- Context Clues lessons include Spanish translations of the context clues strategies.



Strategic scaffolds, like a glossary with Spanish definitions and translations of instructional strategies, are provided throughout the lessons.

Support Students in Use of Multiple Strategies to Unlock the Meaning of Unfamiliar Words

In the Grades 3–5 *i-Ready* Vocabulary lessons, students learn a routine that reminds them to “look inside the word (morphology), look around the word (context), or look beyond the word (dictionary, glossary)” whenever they encounter a new word. Students learn to assess each target word and select the correct strategy to unlock its meaning.

- If the target word contains affixes or word roots, students practice looking “inside the word” to identify those parts and their meanings. Then, students combine the meanings of those parts to generate the whole word’s meaning.
- If the target word is embedded in a rich text, students learn to look “outside the word,” identifying and analyzing surrounding words and phrases to glean the meaning of the target word from the context clues.
- Activities in lessons focused on morphology provide students with practice applying the “look inside the word” and “look around the word” strategies flexibly to determine the meaning of words whose individual parts don’t clearly add up to the meaning of the whole word.
- As needed, students look “beyond the word” by consulting the built-in dynamic glossary to learn the meanings of affixes, base words, and academic terms.

Throughout lessons, students see how the strategies they are working on help them to unlock many new words.



Lesson Plans for Teacher-Led Instruction

In the downloadable Tools for Instruction PDFs, teachers are provided with lesson plans to supplement the digital lessons offline in a variety of ways, including focuses on shades of meaning and figurative language and suggestions for students to provide their own examples of words in different contexts. These activities encourage student expression and explore all language functions: listening, speaking, reading, and writing.

Research on Effective Reading Comprehension Instruction

According to research, students can benefit from reading comprehension instruction that incorporates careful selection of the texts students will read, research-supported instructional features, and technology enhancements that provide adaptive scaffolding and combat mind wandering.

Text Selection

Inclusion of texts incorporated into reading comprehension instruction based on research and expert opinion can support knowledge building, vocabulary development, and higher-order thinking. Selecting appropriate texts can also have a positive impact on student interest and motivation to read.

Include Appropriately Complex Texts

ACT, a national leader on college and career readiness, has specified key characteristics of complex texts (2006):

- *Relationships: Interactions among ideas or characters in the text are subtle, involved, or deeply embedded.*
- *Richness: The text possesses a sizable amount of highly sophisticated information conveyed through data or literary devices.*
- *Structure: The text is organized in ways that are elaborate and sometimes unconventional.*
- *Style: The author's tone and use of language are often intricate.*
- *Vocabulary: The author's choice of words is demanding and highly context dependent.*
- *Purpose: The author's intent in writing the text is implicit and sometimes ambiguous.*

According to research conducted by ACT (2006), students who can read and understand complex texts have a higher probability of being ready for college than those who cannot read complex texts. This was found to be more important than the “comprehension level or the kind of textual element tested.” These results were consistent across gender, race, and family income.

A review of studies subsequent to the ACT research affirms the strong link between students' ability to read complex texts and their success in college and careers (CCSSO, 2012). Experts in reading instruction find that complex texts and the knowledge gained through reading them provide an “anchor” for students continuing to increase knowledge (Robertson, Dougherty, Ford-Connors, & Paratore, 2014). Reading such texts “supports students' acquisition of sophisticated and grade-appropriate vocabulary, concepts, and linguistic structures” and their development of more sophisticated thinking and analytical abilities (Robertson et al., 2014; Stahl & Nagy, 2006). Researchers have found that a knowledge gap develops between students who read complex texts and those who do not—a gap that can follow students throughout their schooling (Robertson et al., 2014; Neuman, 2006).

Incorporate Multiple Genres and Information-Rich Texts

Researchers recommend incorporating multiple genres as part of comprehension instruction, including informational texts, narratives, and storybooks. Informational texts build content knowledge and vocabulary development, while stories “convey information in ways that spark children’s imagination and thought processes” (Roskos & Neuman, 2014).

Select Texts That Interest and Motivate Students

Interest and motivation are essential for effective reading comprehension to occur. Experts in English language arts, drawing upon research, have called on teachers and curriculum publishers to pay attention to motivation and engagement as a key consideration in developing successful readers. The experts argue that motivating and engaging students is essential in supporting their perseverance on challenging reading tasks, and it has been shown to improve strategy use and reading achievement (Robertson et al., 2014).

Selecting high-interest texts is a key aspect of motivating students to read. Researchers have confirmed that reading on topics students want to learn about, and texts that include captivating characters and stories, will increase students’ time spent on reading and investment in reading, which in turn will foster comprehension (Robertson et al., 2014).

Features of Effective Reading Comprehension Instruction

Research demonstrates that the following are critical for effective comprehension instruction:

- Allowing the text to take center stage and reducing unnecessarily long prereading rituals
- Interspersing comprehension questions that serve as “bread crumbs” to help students establish the meaning of a text
- Offering a multistrategy approach to reading comprehension processes
- Encouraging rereading as a strategy to help students reinforce, deepen, and consolidate learning from reading
- Incorporating graphic organizers to support comprehension of texts

Focus Instruction on the Text

The Common Core and other state standards emphasize the importance of engaging with text as being central to students’ learning experience, with only minimal time spent on prereading activities. This shift in focus places ideas and thinking about ideas back to the center of the reading curriculum. Shanahan, a literacy expert, and other researchers (2013) recommend that any prereading intervention should be limited to a brief introduction to the topic, and students should be told the genre and why they will be reading the text.

While the original justification for helping students tap prior background knowledge in order to understand a text remains true, the ritualistic prereading practices that have developed around comprehension instruction have become perfunctory. Often background preparation actually detracts from the key ideas in the text and loses sight of the fact that the purpose of reading is to “interpret the text based on the information on the page rather than from the prereading activity initiated by the teacher” (Shanahan, 2013).

Intersperse Comprehension Questions to Help Students Establish the Meaning of the Text

Beck and McKeown (2006) spent 15 years conducting research and devising and revising an effective approach for helping improve instruction in reading comprehension. They concluded that questions should be designed to anticipate likely comprehension challenges.

Beck and McKeown's research suggests that interspersing comprehension questions throughout the reading of a text is more effective in fostering comprehension than asking questions after reading the text, as is commonly practiced (2006). They note that the latter practice leaves students stranded while reading the text—some students have questions or feel lost as they read, and some may develop misconceptions. Beck and McKeown advise that interspersing questions in reading instruction gets students to focus on understanding each portion of the text as they first read it. This strategy helps ensure that “the local understanding gets settled sufficiently so that global understandings are founded on solid ground” (Beck & McKeown, 2006).

Teach Multiple Comprehension Strategies

The NRP analyzed 203 scientific studies on comprehension instruction and found that: “. . . interactive strategic processes are critically necessary to the development of reading comprehension” (NICHD, 2000). They also found that helping students learn specific cognitive strategies and guiding students to reason strategically when challenges to comprehension occur can improve reading comprehension (NICHD, 2000).

Based on empirical evidence, the NRP concluded that teaching different reading comprehension strategies results in increased retention and understanding of new passages, and instruction on flexible use of multiple strategies is effective in teaching comprehension (NICHD, 2000).

Encourage Rereading as a Comprehension Strategy

Roskos and Neuman, drawing on current research and best practices, conclude that teachers should encourage students to reread. These experts in literacy education advise that rereading is an effective strategy that enables students to develop an “aggressive, probing, analytical approach” to the content of the text, including the “function of details, . . . logical order, and relationships in text organization” (2014).

Research indicates that rereading can improve students' ability to monitor and evaluate their own comprehension when reading new texts, and this “meta-comprehension accuracy” is an important strategy when students are approaching complex texts (Roskos & Neuman, 2014).

For Shanahan, rereading is a strategic interaction with the text for specific purposes that include multiple intensive readings to better analyze text while reading and after reading (Roskos & Neuman, 2014, p. 508, citing Shanahan, 2012). Students are guided to reread a text to focus on “how the text works to communicate concepts, principles, themes, [and] arguments” (Roskos & Neuman, 2014).

Incorporate Graphic Organizers to Support Comprehension of Texts

Use of graphic organizers is another effective comprehension strategy. Graphic organizers provide students with a way to visually represent the meanings and relationships of the ideas that are being communicated in a text.

The NRP found that graphic and semantic organizers helped students further their understanding of texts. In reviewing 11 scientific studies, the NRP found evidence that these tools were effective in improving reading comprehension and memory (NICHD, 2000).

Technology-Enhanced Reading Comprehension Instruction

Research points to ways that technology can be used to enhance reading comprehension instruction and practice, including dynamic instructional feedback, other adaptive scaffolding support, and features to prevent mind wandering during reading, in order to improve focus.

Incorporate Technology-Delivered Feedback

Using technology to provide students with ongoing feedback on their understanding of text has been shown to be effective in improving their reading comprehension, especially for struggling students. Additionally, using technology to provide students with metrics on their performance during reading comprehension practice holds students accountable for their time spent on reading—and this ensures that students keep their eyes on the text, a predictor of reading achievement (Reutzel, Petscher, & Spichtig, 2012).

Use Technology to Provide Adaptive Scaffolding

According to Shanahan (2013), scaffolding during reading comprehension instruction is especially necessary in the context of requirements for “more complex and challenging texts.”

Research suggests that technology-based scaffolding that adapts to the needs of the learner is more effective than a “one-size-fits-all” instructional approach. Scaffolding involves assisting students when in need and fading that assistance as they demonstrate greater competence. Scaffolding involves shifting some control from the learner until the learner acquires the needed abilities to learn independently (Molenaar & Roda, 2008).

Research supports technology-based learning environments featuring learner-driven activities with responsive instructional scaffolding, provided as needed. Molenaar and Roda (2008) compiled research and best practices in order to devise a more effective model for scaffolds that respond to student attentional processes. They advise that support needs to adjust in tandem with the student’s evolving knowledge and skills.

Scaffolding has been shown to be most effective when it includes diagnosis, calibration, and fading. Diagnosing involves ongoing measurement of the student’s level of understanding. Calibration involves selecting the optimal amount, form, and timing of interventions based on student timing and responses. Fading involves reducing the scaffolding as the student gains proficiency (Molenaar & Roda, 2008).

In technology-enhanced instruction, research shows that scaffolding that uses prompts and question prompting provides students with many benefits that can enhance and support their learning (Molenaar & Roda, 2008).

Include Digital Features to Combat Mind Wandering

Smallwood and Schooler (2014) reviewed studies conducted on the link between mind wandering and educational outcomes such as reading comprehension. They found a strong link between mind wandering and poor reading comprehension outcomes. These researchers concluded that by having students engage in practices where consistent demands are made on their external attention, there is a reduction in mind wandering. Also, students are more successful in tasks such as reading comprehension. Technology-enhanced instruction can better focus student attention and achieve successful reading comprehension outcomes.



How *i-Ready* Reading Comprehension Instruction Aligns to the Research

i-Ready Comprehension lessons reflect current research and expert recommendations on fostering effective comprehension abilities by featuring complex, engaging, and rigorous text, making text central to the learning experience, and providing technology-enhanced individualized scaffolds as needed to support and motivate each reader.

The *i-Ready* Comprehension lessons share this common approach while at the same time differentiating the lessons for the K–2, 3–5, and 6–8 grade bands in order to meet the changing needs of students at each stage of reading development.

For additional support, *i-Ready* provides downloadable Comprehension lesson plans (i.e., Tools for Instruction) that can be used for teacher-led Comprehension instruction.

i-Ready Comprehension Lessons Are Built around High-Interest, Complex Texts

i-Ready Comprehension lessons feature high-interest texts of appropriate complexity and rigor to build student knowledge and vocabulary and ensure college and career readiness. Lessons have been designed to deepen student reading comprehension and motivate them as they experience and grow accustomed to reading these more challenging texts independently.

i-Ready Comprehension lessons provide a roughly 50–50 balance between informational and literary reading. The texts include a wide variety of genres and expose students to content that expands students' knowledge about the world.

High-interest texts are part of all *i-Ready* Comprehension lessons. Curriculum Associates' internal research has determined that content priorities for children in Grades K–5 include humor, imagination, mysteries or problems to solve, fresh perspectives on science and social studies topics, and opportunities to learn something new. The new reading comprehension lessons for Grades 6–8 texts address contemporary, relevant topics and themes that middle school students care about and that reflect students' life experiences, interests, and knowledge. Across Grades K–8, the texts are culturally and linguistically responsive to reflect the diversity of the students who use *i-Ready* and foster students' investment in reading.

i-Ready Comprehension Lessons Focus on the Text

The design of *i-Ready* Comprehension lessons reflects the focus of college and career readiness standards on making the text central to the learning experience. The lessons put the focus on deep understanding of text by creating a personalized learning experience with software that responds to student actions and inactions and by supporting student conceptual understanding of the text via scaffolding.

In *i-Ready* Comprehension lessons, students are guided through a careful reading of complex texts. Each text is broken into segments, and text details critical to understanding each segment are identified. Comprehension questions require students to engage with these details, and students are guided to reread a segment as needed to deepen understanding.

The Grades K–2 reading comprehension lessons in *i-Ready* keep prereading experiences to a minimum, using them only when essential. Efficient background building is done before reading, with the use of a background knowledge question. If students can answer the question correctly, they are taken straight to the text to start reading. If students answer the question incorrectly, information and visuals are provided to build knowledge or activate prior knowledge needed for comprehension of the upcoming text.



For example:

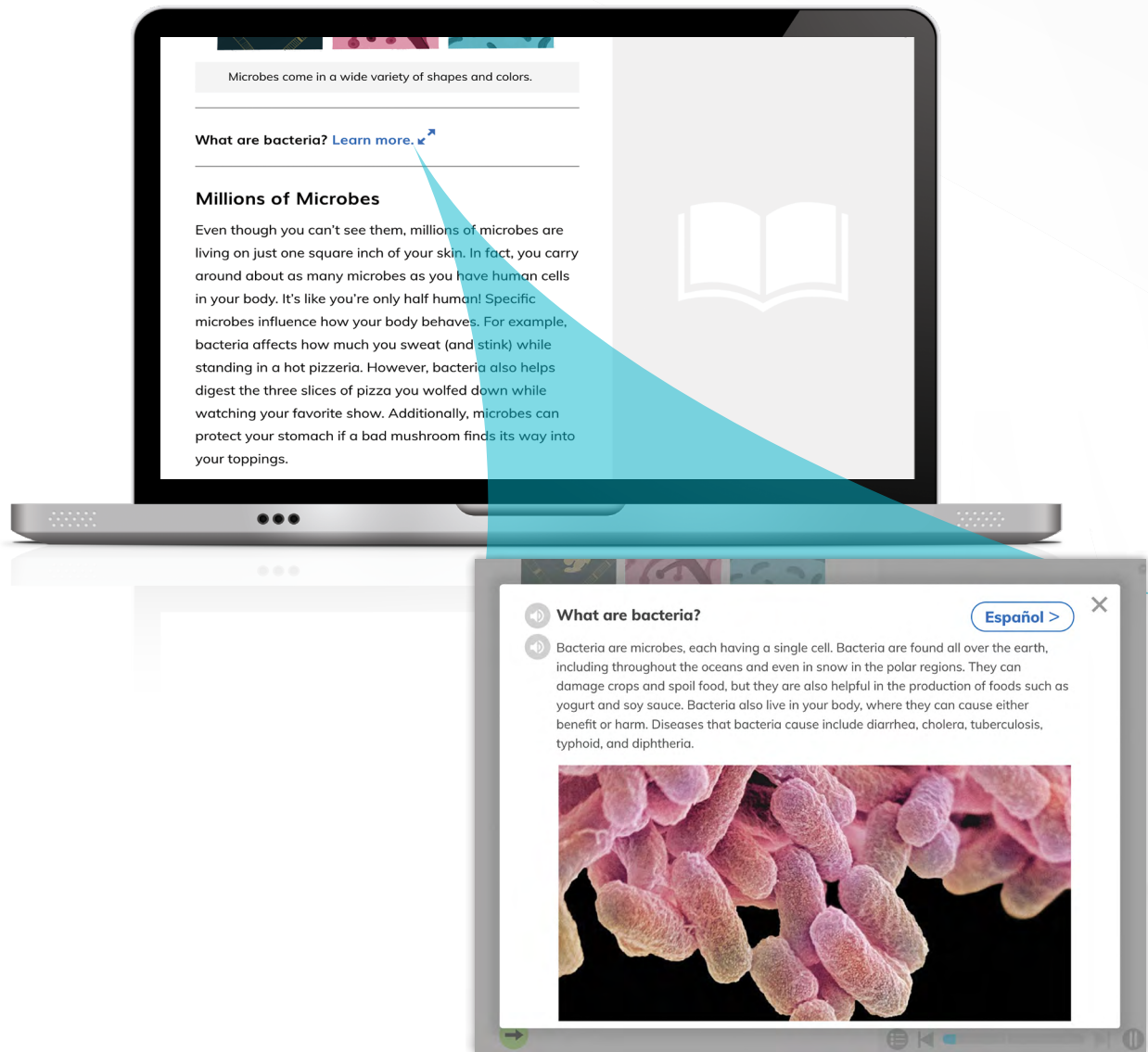
Narrator: Before you read, do you know what happened in the Apollo 11 space mission? If you don't, tap the question mark.



Narrator: During the Apollo 11 space mission, two humans walked on the Moon for the first time.

New lessons for older students probe and activate background knowledge during reading—not before—which allows students to dive right into the text. Students encounter optional pop-up support as they are reading and can decide if they want to access it. These pop-ups provide text and visuals that provide additional information about important ideas in the text.

For example:



In the *i-Ready* Close Reading lessons, friendly characters support student comprehension during reading by activating their background knowledge and modeling various reading strategies. A back-and-forth conversation between the student reader and the characters takes the form of text messaging throughout each of the several readings of a text.

i-Ready Intersperses Comprehension Questions to Help Students Establish the Meaning of the Text

Throughout each lesson, the comprehension questions are intentionally interspersed. In planning the questioning strategy for a lesson, the *i-Ready* Editorial team uses the Backward Design Model recommended by Wiggins and McTighe (2005). The team imagines characteristics of the reader,

including what knowledge students might lack related to life and cultural experiences, their knowledge of other texts, and their likely content area knowledge. The writers and editors articulate the following:

- *What basic things would a child know if they understood the text?*
- *How conceptually challenging are these understandings for a young reader? Which are concrete, and which are abstract?*
- *What happens inside the text that makes it difficult for a young reader to achieve this understanding?*
- *What should a child discover when he or she studies the text more closely?*

Then, adhering to research and recommendations for best practices referenced earlier in this report, questions are interspersed strategically to get students to focus on the important understandings as they encounter them. If a student answers a question incorrectly, the software responds immediately, employing a variety of techniques to ensure understanding of the current text portion before the student is allowed to continue reading. This approach helps prevent the student from getting lost or developing misconceptions during reading, and it leads to a deeper understanding of the text.

i-Ready Teaches and Supports Students in Applying Multiple Comprehension Strategies

Following the findings of the NRP, all Comprehension lessons in *i-Ready* provide students with opportunities to learn and apply a variety of skill-based strategies for understanding a text (NICHHD, 2000). Each lesson teaches a target standard, with additional focus on integrated standards to ensure students understand the text as a whole. As needed, students receive guidance on applying comprehension strategies such as making inferences, making predictions, summarizing, paraphrasing, and evaluating their own understanding. These strategies are especially important for understanding text after Grade 3, when reading instruction shifts from learning to read to reading to learn.

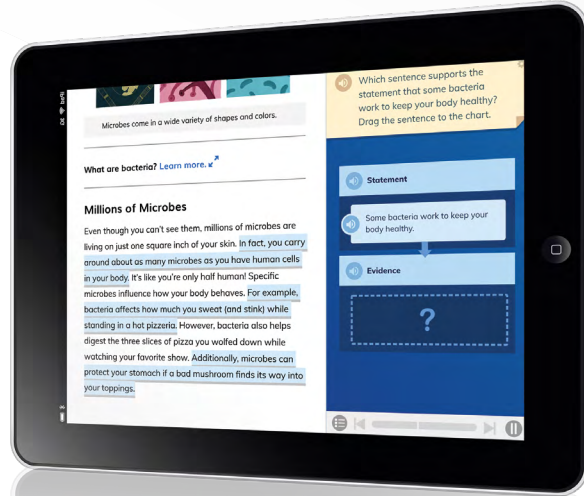
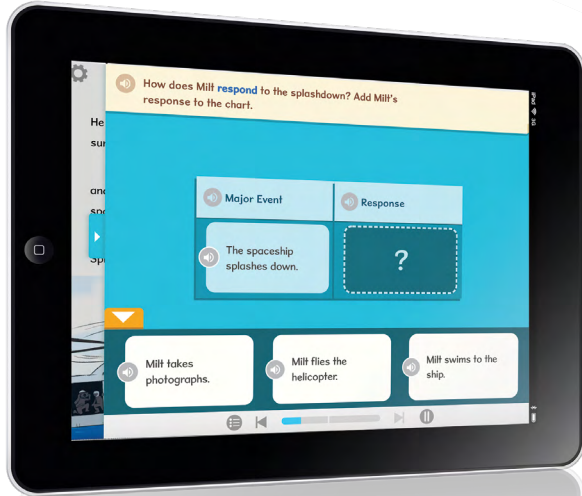
i-Ready Encourages Rereading as a Comprehension Strategy

Rereading is introduced to students in the context of self-monitoring practices. When students respond incorrectly to an interspersed comprehension question, which signals miscomprehension, the students are guided to return to the critical text segment to improve their understanding before reading on.

In the *i-Ready* Close Reading lessons, students are guided to read the text multiple times, with each pass focusing on reading for a different purpose: to understand, to analyze, and to integrate understanding into existing knowledge by writing about the text.

i-Ready Incorporates Graphic Organizers to Support Comprehension of Texts

Following the review of research on comprehension conducted by the NRP (NICHHD, 2000), all *i-Ready* Comprehension lessons include graphic organizers to provide students with ways to represent the meanings and relationships of the ideas that are being communicated in a text to further student comprehension of the text.

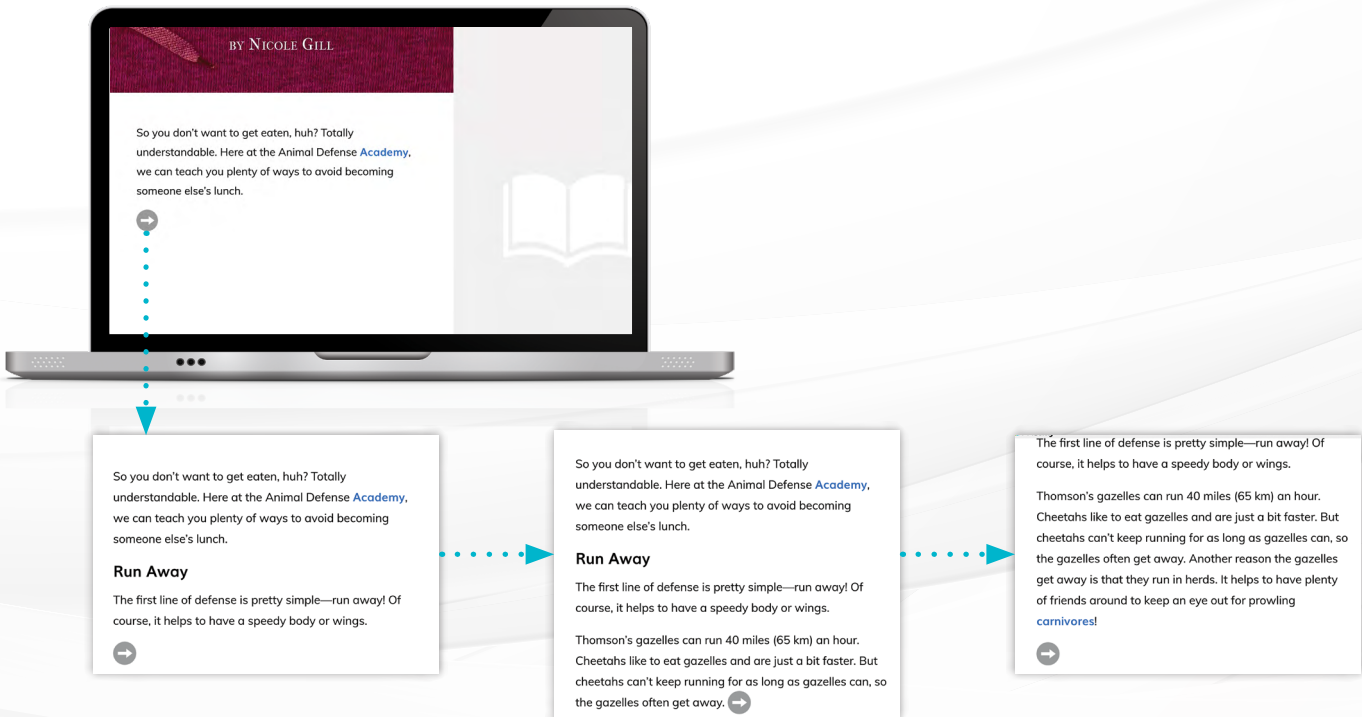


i-Ready Takes Advantage of Technology to Enhance Students' Reading Comprehension

i-Ready incorporates digital features that facilitate deep reading, provide individualized support as needed through dynamic instructional feedback and scaffolding, and help combat mind wandering.

Gradual Text Unlocking

In the new *i-Ready* Comprehension lessons for Grades 3–8, students read the first segment of the text and then gradually unlock additional segments with the click of the arrow icon. Thus, students have autonomy over when they are ready to unlock more reading, which keeps them focused, active, and engaged, and makes large, challenging texts feel more manageable.



Unlocking Reading Comprehension Tasks Unexpectedly with Instructional Support as Needed

In the Grades 3–8 lessons, the reading comprehension tasks are unlocked unexpectedly during reading so students are prevented from jumping ahead to the questions, a behavior that discourages deep reading. These activities help students monitor their understanding of the text and access support when their comprehension breaks down.

Responsive Instruction

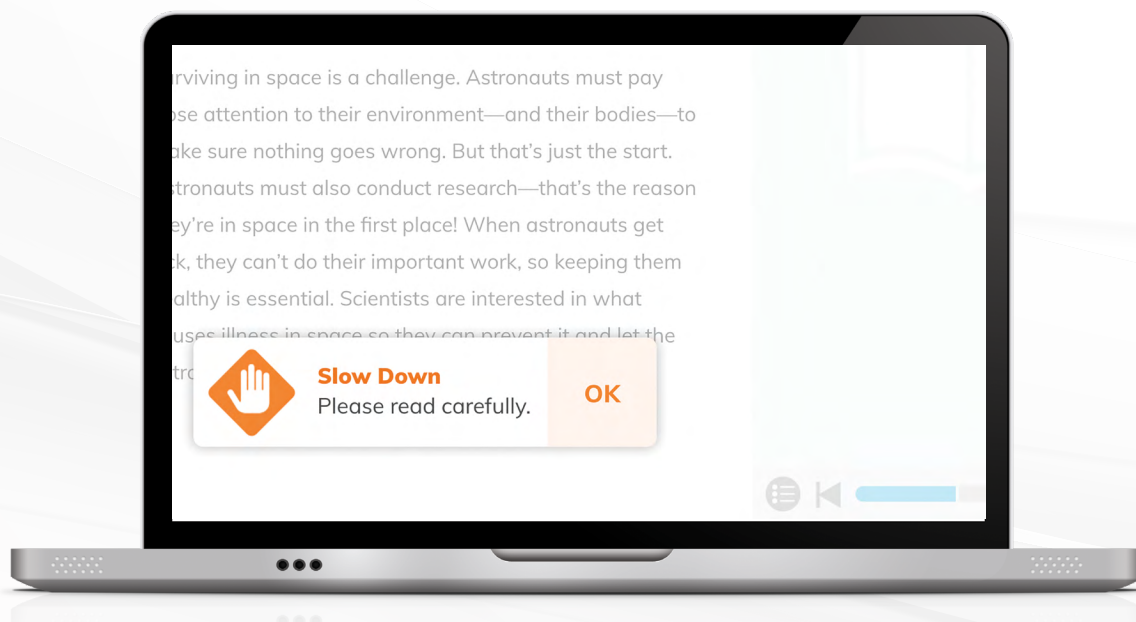
All *i-Ready* Comprehension lessons provide students with just-in-time instructional support to give them an efficient path, with instruction provided when and where students need it, after the software detects signs of struggling. Students who answer an initial big-picture question correctly can continue reading independently, without unnecessary instruction. Students who answer the initial question incorrectly have demonstrated the need for instructional support, so they are provided with easier questions that break the original, more complex question into manageable steps. These questions use highlighting and other audio and visual cues to focus student attention on a segment of text to reread. Instruction on target or supporting standards is provided to help guide students' thinking before they return to the original question and have the opportunity to try answering it again.

Age-Appropriate Read-Aloud Support

Read-aloud support for text passages varies as students progress through the K–8 grade span. In Grade K lessons, text is read aloud automatically. At Grade 1, read-aloud support is optional, with the audio button always available. At Grade 2 and beyond, the read-aloud option becomes available if a student is struggling.

Monitoring Silent Reading Rate

i-Ready monitors each student's silent reading rate and detects when a student is reading too quickly. As needed, students are advised to slow down for deeper understanding of the text.



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