

Science of Reading: Providing Research-Based Early Literacy Instruction for All Students



Literacy skills are critical for academic, social, and economic success. The most effective approach for teaching reading is aligning with the science of reading. The science of reading reflects a vast, interdisciplinary body of scientifically-based research that provides a preponderance of evidence to inform reading instruction (National Center on Improving Literacy, 2022). Specifically, the science of reading is based on five big ideas including: Phonemic Awareness, Phonics, Fluency, Vocabulary, and Comprehension. Students who become proficient readers by third grade have acquired the literacy foundation necessary for academic success and are able to transition from learning to read to reading to learn (National Conference of State Legislatures, 2019). Students who are not proficient readers by third grade are more likely to experience academic difficulty and experience diminished economic opportunities in life (Chiang, et al., 2017).

In 2019, the National Assessment of Educational Progress (NAEP) results indicated that only 36 percent of fourth-grade students met grade-level proficiency in reading. As a result, numerous states have passed third-grade reading laws that specify services for supporting all students in grades kindergarten through third grade to ensure reading proficiency.

In selecting supplemental reading support for kindergarten through third-grade students, states specify that programs are evidence-based and align with research recommendations for early literacy development. The National Institute of Child Health and Human Development (NICHD, 2000) has established that teaching foundational skills such as phonological awareness, phonics, fluency, vocabulary, and comprehension is necessary for students to become proficient readers.

Explicit, systematic instruction is most effective for teaching foundational reading skills (NICHD, 2000). Additionally, in developing students' ability to comprehend text, the Institute of Education Sciences (2016) recommends that literacy instruction focus on academic language and provide ample opportunity for students to read connected texts and acquire close reading skills.

Within frameworks of research-based, systematic instruction, teachers can support all students in mastering early literacy skills with instructional scaffolding. Instructional scaffolding provides temporary supports that enables students to successfully complete tasks and acquire new skills that may be beyond their ability to complete without assistance (Wood, Bruner, & Ross, 1976).

5 big ideas of the science of reading:

Phonemic Awareness

Phonics

Fluency

Vocabulary

Comprehension

Task (sequenced steps for completing a task), content (appropriate content for students' instructional levels), and material (visual or material guidance for completing tasks) scaffolds are effective supports that enable early learners to acquire foundational literacy skills (Iris Center Peabody College, n. d.). As students engage with scaffolded instruction, teachers gradually release responsibility to students by moving from modeling to guiding and supporting learning, and then to facilitating independent practice and application, thus supporting skill mastery for students.

Imagine Language & Literacy is a research- and evidence-based supplemental program that accelerates early literacy development for students in kindergarten through third grade by providing explicit, systematic instruction in foundational reading skills. The digital curriculum addresses academic language development, integrating connected and close reading activities throughout the program, and individualizing instruction to meet the needs of specific students.

Explicit, Systematic Instruction in Foundational Reading Skills

Explicit instruction is characterized by instructional sequences in which teachers present new material by modeling and providing examples of concepts, guiding students' practice, providing feedback and correction during guided practice, and then assigning ample independent practice so that students have the opportunity to master new skills (Rupley, Blair, & Nichols, 2009). Literacy instruction is systematic when sequenced to build foundational skills before exposure to more advanced skills.

Imagine Language & Literacy's instructional sequences are intentionally designed to build foundational skills in early learning by focusing on phonological awareness, phonics, and word reading before exposing students to more complex learning and texts. For example, more common letters and sounds are presented first before moving students to advanced phonics skills including vowel-consonant-e patterns. Similarly, foundational vocabulary (i.e., basic vocabulary words) and comprehension instruction (i.e., literal comprehension) is provided at the beginning levels before moving students to advanced skills.

Instruction in Imagine Language & Literacy is explicit throughout the program. Instructional sequences scaffold learning and begin with modeling of new skills, include multiple examples of concepts and skills, provide practice with immediate feedback and correction, and support independent practice and mastery with feedback and correction. The following sections describe Imagine Language & Literacy's approach to support early literacy development.

Phonological Awareness

Phonological awareness is the ability to break down spoken words into smaller parts, such as words, syllables, onsets (the consonant that precedes a vowel), and rimes (the vowel and following consonants in the syllable) as well as individual speech sounds called phonemes (Gillon, 2018). Phonological awareness is important because it helps readers decode words (Ehri, 1992; Yopp, 1992; Ehri, 2005) and has a causal impact on word recognition, reading comprehension, and spelling performance (Bradley & Bryant, 1983; Gillon, 2018).

Imagine Language & Literacy explicitly teaches students phonemic and phonological awareness through a developmental progression of engaging activities. The program begins by explicitly teaching students phonemic skills. Students are supported with task scaffolding by being shown how to rhyme, segment, or blend sounds. Students then practice listening to poems, rhymes, and stories with repetitive refrains, rhymes, and language patterns to identify the sound structure of language before moving on to independently practicing new skills. Throughout early literacy lessons, students are provided multiple opportunities to isolate, identify, blend, delete, and add sounds to enhance their understanding of phonemic awareness.

Phonics

Effective phonics instruction “teaches students to use the relationship between letters and sounds to translate printed text into pronunciation” (Shanahan, 2005). When children learn to read, they sound out words and use visual cues, syntactic cues (how the words are ordered), or semantic cues (how the word fits into a sentence) to make meaning from text (Tankersley, 2003). This process, called decoding, enables students to figure out words they have never seen. Research confirms that systematic phonics instruction (teaching phonics elements in a carefully planned sequence) and explicit decoding instruction leads to better spelling and reading achievement than unsystematic instruction or no phonics instruction at all (NICHD, 2000).

Phonics instruction in Imagine Language & Literacy is systematic and follows the developmental understanding of letter and sound principles. Phonics instruction starts with phonemes and focuses on the most frequently used letter sounds. Activities are sequentially ordered to begin with initial sounds followed by ending sounds. Students then learn medial sounds as they read short vowel words (consonant-vowel-consonant) to apply their phonics and word recognition skills to a digital Beginning Book (an online text with modeled think-alouds and supportive illustrations). Students are taught to blend sounds together and use onsets and rimes effectively. Ultimately, larger chunks of sounds are taught, such as inflectional endings, prefixes, and suffixes.

Fluency

Fluency is the ability to read accurately, quickly, expressively, with good phrasing, and with good comprehension. Fluency is important because it is a strong predictor of reading comprehension (Kuhn & Stahl, 2000; NICHD, 2000; Rasinski & Hoffman, 2003).

In Imagine Language & Literacy, students hear models of expressive reading and build decoding and fluency skills while reading a variety of digital Read-Along, Transition, and Leveled Books that cover a wide array of literary genres such as myths, plays, poems, biographies, narratives, and tall tales; as well as information texts highlighting mathematic, scientific, and historical information.

Vocabulary

Numerous studies show that there is a reliable and reciprocal relationship between vocabulary and reading comprehension (Stanovich, 2000; Beck, McKeown, & Kucan, 2002; Marzano, 2010). That is, increased vocabulary exposure leads to improved reading comprehension, and increased

reading exposure leads to vocabulary growth. Students need to have a large enough vocabulary to make reading meaningful (Burns, Griffin, & Snow, 1999).

Vocabulary lessons are integrated throughout all instructional sequences in Imagine Language & Literacy. Vocabulary instruction addresses basic, high-frequency, and irregular words through explicit instruction and contextualized practice. Academic vocabulary instruction focuses on general academic words as well as discipline-specific words. For vocabulary instruction, targeted nouns, adjectives, and verbs were selected from various state tests, the Academic Word List (AWL), and from research by Marzano and Pickering (2005).

Comprehension

To comprehend the meaning of a text, a reader must not only decode words on a page, but also draw on his or her own background knowledge, make sense of language structure, use verbal reasoning, and apply literacy concepts to make meaning of the author's purpose (Scarborough, 2001).

Imagine Language & Literacy includes a wide array of online books and texts suitable for students at all reading levels in grades kindergarten through third grade. When students first begin using Imagine Language & Literacy they complete a placement test that identifies students' instructional levels. Learning is scaffolded with content support as students are placed in book sequences appropriate for their levels. Beginning readers interact with Read-Along books that provide narration for text. As students advance, they encounter decodable texts (Beginning Books) and then texts that serve as a bridge to leveled texts (Transition Books). Leveled text selections (Leveled Books) increase in difficulty as students advance through second and third-grade material.

Instructional sequences for books include learning activities that activate prior knowledge, teach comprehension skills, and provide the opportunity for students to apply learning in answering a range of comprehension questions.

Academic Language Development

The development of academic language is critical for school engagement and success. Academic language skills enable students to understand the formal structures and words found in books and schools and to learn how to process complex forms of language that include inferential and narrative language and academic vocabulary. Students use academic language to engage in discourse that involves thinking critically, expressing complex thoughts, and connecting ideas from multiple contexts (Foorman et al., 2016).

Imagine Language & Literacy exposes students to an appropriate mix of literary and informational texts. The program includes a variety of genres ranging from myths, plays, poems, folktales, and fables to biographies and narratives. Selected texts feature subjects and themes that address academic language as well as multiple content areas, including science, social/cultural studies, and history.

INFERENTIAL LANGUAGE

Academic language skills are taught explicitly in Imagine Language & Literacy. Students learn how to compare elements of reading selections and learn the language associated with analyzing text. Comprehension sequences of pre-reading strategies, during and post-reading questioning, and summarization help students learn and practice using inferential language skills of problem and solution, cause and effect, and author's purpose. Paired reading selections provide an opportunity for students to connect ideas across sources of information and increase exposure to domain-specific vocabulary. For example, *The Record Breakers* and *Picture This* are paired texts that highlight mathematical reasoning and teach academic vocabulary associated with mathematics.

NARRATIVE LANGUAGE

Imagine Language & Literacy includes engaging narrative selections ranging from legends and folk tales to brief fictional stories. For beginning readers, students learn to sequence events and how to answer literal and inferential questions about fictional characters and events. In *Transition* and *Leveled Book* lessons, students learn story elements such as character, plot, and setting. As books advance in difficulty, students are exposed to increasingly complex grammatical structures and story elements.

ACADEMIC VOCABULARY

Imagine Language & Literacy explicitly teaches and spirals academic and domain-specific vocabulary throughout the program. The program teaches more than 800 cross-curricular words and reinforces these words 8 to 12 times. Prior to reading a text, instruction previews critical and domain-specific words. As students advance in reading material, they learn general academic words such as explain and compare and are then exposed to domain-specific words such as subtract and experiment.

Comprehension and Fluency with Connected Text and Close Reading

Connected texts are texts with sentences that relate or connect to one another. In learning to read, students need to read connected text daily to become fluent, accurate readers (Foorman et al., 2016). Reading connected text is particularly important for students as they are learning the alphabetic principle and how to decode. To support students, sound patterns should be taught first with exposure to single words. Then, students should be given the opportunity to read the sound patterns in connected text.

Imagine Language & Literacy's decodable text lessons follow recommended instructional sequences for moving from spelling patterns to connected text, and provide content scaffolding by introducing new words and skills in sequences appropriate for students' instructional levels for acquiring foundational reading skills.

In *Decodable Book* lessons, students are first taught spelling patterns like am and at. They learn to read multiple words with the specific patterns and how to spell words before reading decodable texts that feature the spelling patterns. For example, students learn to read Pam and hat before reading the decodable text *Pam's Hat*. This effective sequence is repeated through all *Beginning Book* sequences.

Close Reading

Successful readers comprehend explicit meanings of text, make logical inferences associated with the material, analyze evidence to evaluate the quality of information, and draw conclusions. Close reading is an approach that supports students in uncovering, engaging with, and understanding texts (Lapp et al., 2015) and focuses on comprehending meaning including sequences of events, information presented, and understanding claims and evidence; authenticating interpretations of text, evaluating information, and understanding author's purpose.

Students learn and practice several reading strategies before, during, and after they read a book (Figure 1). Throughout the program, students are supported in developing critical thinking skills as they cite text evidence, identify main ideas and supporting details, and answer questions related to author's purpose and craft. As students read texts, the interactive elements of the screen (including interactive words, glossary, and clickable pictures in Read-Along books) provide material scaffolding (on screen instructions and organizers) keep students engaged and focused.

Reading Strategies

Before

- Previewing the text
- Accessing prior knowledge
- Formulating questions
- Clarifying understanding
- Setting a purpose
- Making predictions

During

- Visualizing
- Making connections
- Monitoring understanding
- Making inferences
- Rereading, questioning and summarizing

After

- Comparing
- Synthesizing
- Drawing conclusions

Figure 1: Students develop critical thinking skills through Imagine Learning Reading Strategies

Conclusion

Given the significance of achieving grade-level reading proficiency by third grade—and the critical role of literacy in academic, social, and economic success—providing effective instruction in early literacy skills to all students is of vital importance. Evidence-based programs for early literacy address the foundational skills, such as phonological awareness, phonics, fluency, vocabulary, and comprehension, while also teaching the academic language and close-reading strategies that students will need for proficiency beyond third grade. With explicit, systemic instruction in foundational reading skills, as well as extensive opportunities for practice with academic language and close-reading strategies, Imagine Language & Literacy utilizes research-based best practices for early literacy instruction.

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