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IESD FOUNDATIONS PAPER

How Imagine Language & Literacy Aligns with Research on Effective Reading Instruction

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A Summary of Independent Research

Prepared by Interactive Educational Systems Design, Inc. for Imagine Learning

Introduction

Research consistently shows that the ability to read is the linchpin to academic success (Lesnick et al., 2010) and economic attainment (Watts, 2020). Data indicate that “students who cannot read proficiently by third grade are four times less likely to graduate high school than proficient readers” (Feister, 2013, p. 5). Other studies confirm that reading performance is one of the best predictors of college success and future earnings (Chetty et al., 2010). Research shows that higher levels of literacy are associated with less poverty, lower mortality rates, stronger economies, more community involvement, and better health outcomes (International Literacy Association, 2015). Notwithstanding the critical importance of reading proficiency in the lives of students, most U.S. students lack the literacy skills they need to succeed. According to the 2019 National Assessment of Education Progress (NAEP), only 35 percent of U.S. fourth-grade students and 34 percent of eighth-grade students are proficient in reading (NAEP, 2019).

Research confirms that robust reading comprehension ability results only when both language comprehension and word recognition (decoding) skills are strong (Gough & Tunmer, 1986; Scarborough, 2001; Catts et al., 2005). While decades of research on the science of reading stress the importance of teaching phonemic awareness, phonics, fluency, vocabulary, and reading comprehension strategies (Castles et al., 2018; National Institute of Child Health and Human Development [NICHD], 2000; Snow, 2002), oral language instruction is often minimized (Foorman et al., 2020). This is problematic, because oral language development is highly predictive of comprehension skills in grades K–10 (Foorman et al., 2015; Foorman et al., 2016).

Educators recognize the importance of providing targeted interventions to ensure students learn to read. The challenge, however, is that students’ needs often vary dramatically. While some students may require explicit instruction in word recognition skills, others may need to focus on building background knowledge, developing vocabulary, or mastering comprehension strategies. To address this challenge, a growing number of schools are turning to online and blended learning to teach critical reading skills. Research shows that blending technology with teacher-led instruction can be particularly effective in improving academic achievement (Means et al., 2013).

This paper summarizes research and research-based recommendations for effective reading instruction, and explains how Imagine Language & Literacy, a blended learning solution, aligns with the research.

Overview of Imagine Language & Literacy

Imagine Language & Literacy is an online adaptive learning solution that accelerates reading and language proficiency for students in grades PreK–6. Designed to supplement core literacy instruction, Imagine Language & Literacy provides instruction and practice in all the critical domains of literacy—phonemic awareness, phonics, fluency, vocabulary, comprehension, and oral language development.

Imagine Language & Literacy delivers explicit, targeted instruction to each student through personalized learning paths that continually adapt based on performance. After an initial placement test, ongoing predictive and evaluative checkpoints ensure students are working in their zone of proximal development. Strategic scaffolding and support further personalize the learning experience for striving readers and English learners.

Imagine Language & Literacy aligns with five well-established, research-based principles of effective interventions that contribute to students' reading achievement. The program:

1. Provides rigorous, explicit instruction that deepens and accelerates students' foundational reading skills, oral language development, fluency, and reading comprehension;
2. Offers multisensory instruction that meets the needs of diverse learners and engages and motivates all students;
3. Offers adaptive, differentiated instruction based on precise ongoing assessment, and provides educators with relevant data and actionable insights for teaching and learning;
4. Integrates strategic scaffolding and formative feedback that makes instruction effective for a diverse array of learners;
5. Integrates research-based guidance to meet the needs of English language learners.

Figure 1 provides a conceptual model of how the program is designed to facilitate learning. This theory of change includes the *inputs*—critical resources that are needed (the Imagine Language & Literacy system and related professional development, technology, and a school implementation plan) to successfully launch the program. The model also documents the targeted *classroom activities*—the interactive online curriculum that makes learning more accessible and engaging to students, along with teacher use of reports and actionable data to empower them to uncover students' strengths and weaknesses and further differentiate instruction. These activities generate *outputs* that include data on student engagement, progress, and achievement, and teachers are prepared to adjust instruction as needed. These outputs lead to *short-term outcomes*—increases in student engagement and in language and literacy skill proficiency. Ultimately, these short-term outcomes lead to *long-term outcomes*, such as improved reading comprehension, language development, and literacy achievement, and increased student self-confidence.

Figure 1. Imagine Language & Literacy Theory of Change

1. Program Inputs

Imagine Language & Literacy

- Explicit, adaptive instruction in foundational reading skills, oral language development, and reading comprehension
- Multisensory instruction and game-based motivation system
- Informative feedback and intentional scaffolding that support student learning
- Precise ongoing assessment and data that empower teachers to monitor student progress and further differentiate instruction
- Professional development and coaching

District

- Technology: networked computers or mobile devices, headphones, and supporting hardware and software
- School and district infrastructure to support technology use
- Teacher-buy-in readiness to adopt technology
- School implementation plan

2. Classroom Activities

Student Activities

- Students spend a minimum of 60 minutes a week in the program.

Teacher Activities

- Teachers use actionable data to monitor student progress, review concepts, and conference with students
- Teachers deliver small-group instruction offline through scripted lesson plans

3. Outputs

Student Outputs

- Student outcomes are tracked in Imagine Language & Literacy data reports

Teacher Outputs

- Teachers feel prepared to implement Imagine Language & Literacy
- Teachers build their understanding of individual students' strengths and weaknesses

4. Short-Term Outcomes

- Students exhibit increased engagement, as measured by usage of and progress through Imagine Language & Literacy
- Students increase language and literacy proficiency, as demonstrated by performance on Imagine Language & Literacy assessments

5. Long-Term Outcomes

- Students increase reading comprehension, language development, and academic discourse on nationally normed or standardized assessments
- Students develop a growth mindset and increase their self-confidence

Principle 1: Provide rigorous, explicit instruction that deepens and accelerates students' foundational reading skills, oral language development, fluency, and reading comprehension.

The goal of reading is to extract and construct meaning from a text. A reader needs “fluent execution and coordination” of word recognition skills (phonological awareness, decoding, and sight word recognition) and language comprehension skills (background knowledge, vocabulary knowledge, language structures, verbal reasoning, and literacy knowledge) to make meaning from a text (Scarborough, 2001). Research shows that word recognition skills and linguistic (i.e., oral language) comprehension abilities account for almost all the variance in reading comprehension (Lonigan et al., 2018).

Phonological Awareness

Phonological awareness refers to the awareness of the “sound structure of language” (Schuele & Boudreau, 2008, p. 5). It is a general term that “encompasses awareness of individual words in sentences, syllables, and onset-rime segments, as well as awareness of individual phonemes. Phonological awareness can also refer to the awareness of segments of sounds in words” (Foorman et al., 2016, p. 41). A subset of phonological awareness is *phonemic awareness*, an auditory process that includes “the ability to notice, think about, and manipulate the individual phonemes in spoken words” and recognize that words are comprised of these individual units of sound (Foorman et al., 2016, p. 41). Phonological awareness is important because it has consistently been shown to predict subsequent word recognition, reading, and spelling performance, with evidence of a causal relationship between phonological awareness and these literacy skills (Gillon, 2018).

According to research and expert opinion, effective phonological awareness instruction should:

- **Be explicit:** The National Reading Panel found that students who received explicit phonological instruction made greater gains in phonemic awareness and reading skills than students who didn’t receive explicit instruction (NICHD, 2000).
- **Be systematic:** Research shows that development of phonological awareness occurs in a series of sequential, overlapping phases (Schuele & Boudreau, 2008). Instruction should teach students (1) that sentences can be broken into words; (2) what syllables are and how to identify and manipulate them within familiar words; (3) how to identify and generate rhyme; (4) how to match words with initial and final sounds; (5) how to recognize onsets (initial consonants) and rimes (the vowel and any consonants that follow the onset) and manipulate them to create new words; (6) how to blend sounds into words; (7) how to segment words into sounds; and 8) how to manipulate phonemes (Foorman et al., 2016; Schuele & Boudreau, 2008). Schuele and Boudreau note that “segmenting and blending are recognized as the critical achievements” on the path to early literacy development (2008, p. 9).
- **Teach letter-sound correspondence and incorporate word-building activities:** Based on its review of 17 experimental and quasi-experimental studies from 2000 to 2016, the What Works Clearinghouse concluded that effective phonological awareness instruction should also teach students letter-sound correspondence and use word-building activities to connect students’ knowledge of letter-sound relationships with phonemic awareness (Foorman et al., 2016).

- **Provide opportunities for phoneme manipulation:** Research has identified several types of phoneme manipulation practices, including isolating or categorizing phonemes in words, segmenting words into phonemes, blending phonemes to form words, adding phonemes to words, deleting phonemes from words, and manipulating onsets and rimes (NICHD, 2000; Schuele & Boudreau, 2008). The National Reading Panel found that focusing on one or two types of phoneme manipulation was more effective than teaching several different types (NICHD, 2000).
- **Be interactive:** Literacy research experts recommend teaching students to play with sounds through activities involving pictures, letter tiles, rhyming, and music to develop students' awareness of the sounds in language (Eccles et al., 2020; Foorman et al., 2016).

How Imagine Language & Literacy Provides Research-Based Instruction for Development of Phonological Awareness

Imagine Language & Literacy provides explicit phonological awareness instruction through a systematic progression of learning activities. From the very start of their experience with the program, students in PreK–2 engage with interactive digital Read-Along books that read stories aloud, with each word highlighted as it is spoken. This connects the early phonological awareness instruction to reading for meaning, while also demonstrating that *sentences are comprised of individual words*. Instruction in phonological awareness skills starts with teaching the meaning of syllables and practice counting, segmenting, and blending syllables in words. Then, students learn about rhymes and practice hearing whether words rhyme, matching words that rhyme, and generating rhymes. Next, students learn to identify *initial and final sounds in words*, determine whether a word starts or ends with a target sound, and match words with the same initial or final sound. Following this, they learn to recognize *onsets*—the initial consonant or consonant cluster of a word (e.g., /c/ in *cat*; /p/ in *pin*)—and *rimes*—the vowel and consonant sound combination that comes after the onset (e.g., /at/ in *cat*; /in/ in *pin*)—and how an onset and rime come together to make a word. Then, they practice blending onsets and rimes. At the end of the phonological awareness progression, students learn to link letter-sound correspondences with phonemes.

Imagine Language & Literacy introduces letter-sound correspondence early in the learning process and then uses written letters and words to develop phonological skills. Students learn the letters of the alphabet and their corresponding sounds, working with a few phonemes at a time and prioritizing consonant and short vowel sounds represented by single letters, since these are used in phonological awareness practice and appear frequently in words students will encounter in the early stages of reading. (For the full progression of letter-sound correspondence instruction, see Phonics and Decoding, later in this paper.)

Students whose first language is not English are taught how sounds in English are like the sounds in their first language, and they are introduced to new sounds in English that are not in their first language. Language-specific support is provided in 15 languages (Spanish, Portuguese, French, Haitian Creole, Korean, Vietnamese, Mandarin, Japanese, Arabic, Russian, Marshallese, Tagalog, Cantonese, Hmong, and Somali). The program integrates written letters and words in all phases of phonological awareness instruction and practice, including focusing on words in sentences, syllables in words, rhymes, initial and final sounds in words, onsets and rimes, and phonemes.

Imagine Language & Literacy includes a variety of practice with phonemes. For example, students practice identifying and naming the initial, final, and medial phonemes in words. Both on computer and off computer, they practice blending single-phoneme onsets with their rimes. In another blending activity, the program presents groups of phonemes and asks students to blend them together. In an off-computer activity, students use letter cards (each representing a single phoneme) to form CVC (consonant, vowel, consonant) words and practice blending the letter sounds to read each word aloud. Students also practice segmenting words into phonemes, both on computer and in small groups.

Imagine Language & Literacy engages students in phonological awareness activities that are highly interactive. For example:

- In the Sound Train activity, students select pictures displayed on the cars of a train that match a given initial sound.
- In Monster Blend, a forklift initially demonstrates how a word's onset and rime come together to make a word. The forklift pushes the word parts for the onset and rime (*s* and *un*) together while the student hears the separate sounds (/s/ and /un/) until the word parts join, and *sun* is made and heard. Then, during Monster Blend practice, students hear an onset and rime spoken (e.g., /p/ and /ot/), and they are asked to blend the sounds (/pot/), select the picture that matches the blended word (a picture of a pot), and drag it to a hungry monster's plate.

Monster Blend

Sound Chase

- In Sound Chase, students see a picture and hear the corresponding word spoken (e.g., a picture of a bat and the word /bat/), then segment the word into phonemes by clicking on the number of sounds they hear.
- In Yakkity-Yak, students help Tak the Yak climb a mountain by listening for a target phoneme in a one-syllable word. They segment the word into phonemes, and then identify the target phoneme's position in the word. If they answer incorrectly, the word is stretch-blended, making the individual phonemes more recognizable.
- The program presents songs on the computer, with the text appearing as the words are sung, to introduce letter sounds and practice rhyming. Students are encouraged to sing along and record their session.

Students also practice phonological skills away from the computer in small-group or whole-class activities. For example:

- They practice blending onsets and rimes in a small-group lesson using puzzle cards. Students select an onset and a rime card, practice saying the onset and rime separately, then move the cards together as they say the blended word.
- Students say tongue twisters to build knowledge of phonemes through alliteration.
- Students also use Elkonin boxes and a small set of letter tiles (e.g., *a, m, d, s, t, p*) to build new words by replacing one letter at a time. For example, starting with the model word *pat*, they take away the *p* and replace it with s to make *sat*; then replace the *t* with *p* to make *sap*. Continuing this process, they make *tap, map, mad,* and then *sad*. With each new word built, students are prompted to blend the sounds of the letters to read the new word.

Phonics and Decoding

The National Reading Panel defines phonics instruction as "a way of teaching reading that stresses the acquisition of letter-sound correspondences and their use to read and spell words" (NICHD, 2000, pp. 2-89). Because the English language uses letters to represent sounds in words, phonics instruction can unlock "a large portion of the system of English orthography" (Mesmer & Griffith, 2005, p. 367). Decoding is more generally "the ability to translate a word from print to speech," which is most typically accomplished by "employing knowledge of letter-sound relationships" and by "sounding out words" (Foorman et al., 2016, p. 38). However, decoding also encompasses instantaneous recognition of high-frequency words, including those with irregular spellings (Foorman et al., 2016; see also Adams, 1990).

According to research, effective phonics and decoding instruction should:

- **Be explicit and systematic in teaching phonics:** Research shows that explicit and systematic phonics instruction provides significant benefits for students in kindergarten through sixth grade, especially for children identified as at-risk for reading failure and students already experiencing difficulty learning to read. Kindergartners and first-graders who were taught systematic phonics were better able to decode and spell, and were better able to comprehend printed material. Older students who were taught phonics were better able to decode, and students with disabilities showed gains in reading comprehension (NICHD, 2000). The hallmark of systematic phonics instruction is direct teaching of a set of letter-sound relationships in a clearly defined sequence. The set includes the major sound-spelling relationships of consonants, short and long vowels, vowel and consonant digraphs, and blends (NICHD, 2000).
- **Teach letter identification:** Research shows that "fluent identification of letters facilitates word recognition, which in turn facilitates reading comprehension" (Schumm, 2006, p. 36).
- **Teach letter-sound correspondence, blending, and sound-spelling patterns:** The What Works Clearinghouse concluded that after letter-sound pairs have been introduced, effective phonics instruction should teach students how to read words systematically from left to right by blending, chunking, and sounding out letter sounds. They also recommended progressively teaching common sound-spelling patterns (for example, begin by teaching consonant patterns and then progress to vowel patterns and syllable-construction patterns) (Foorman et al., 2016).
- **Teach word recognition:** In her seminal work, *Beginning to Read*, Adams (1990) advises that automatic word recognition is essential for understanding connected text, and this automaticity of word perception "is afforded only through learning" (pp. 228-229). Based on its research review, the What Works Clearinghouse recommends teaching high-frequency words with regular and irregular sound-spellings "so that students can recognize them efficiently" (Foorman et al., 2016, p. 28). Word recognition occurs in developmental stages, based on knowledge of the alphabetic principle, sound-symbol correspondences, and the size of the child's sight word vocabulary (Combs, 2012).
- **Teach encoding:** Encoding is the ability to determine the spelling of a word based on the sounds in the word. Encoding instruction is not limited to teaching only spelling patterns and memorization skills. According to Weiser and Mathes (2011), it includes "explicitly teaching beginning readers and spellers to write words according to their phoneme-grapheme correspondences, to build words using manipulatives … and to learn to manipulate phoneme-grapheme relationships to make new words" (p. 171). Their best-evidence synthesis found that explicit encoding instruction improved students' performance in "phonemic awareness, spelling, decoding, fluency, comprehension, and writing" (p. 170).

- **Provide application opportunities:** Research supports giving students the opportunity to practice previously taught sound-symbol correspondences and sound-spelling patterns "using word lists, decodable sentences, short decodable texts, or texts that contain many examples of words spelled with recently learned letter sounds or sound-spelling patterns" (Foorman et al., 2016, p. 28). Weiser and Mathes (2011) note that "students practice acquired decoding skills when they blend sounds and recognize words, when they orally or silently read lists of words or pseudowords, and when they read connected text (e.g., sentences, paragraphs, stories, and books)" (p. 71). Copeland and Keefe (2017) point out that struggling students need to have opportunities to apply word strategies and learn target words in a variety of text formats, such as printed "books, digital texts, and handwritten letters" (p. 645).

How Imagine Language & Literacy Provides Research-Based Phonics and Decoding Instruction

Imagine Language & Literacy provides explicit and systematic phonics instruction that progresses from letter identification to mastery of letter-sound relationships to blending to application of vowel-consonant sound-spelling patterns and beyond.

Students are first introduced to letter names through engaging songs and activities. The program teaches students capital letters, then lowercase letters. It presents letters in order of those frequently encountered, beginning with high utility and moving to low utility. It carefully highlights the differences and key features of the letters. Students have multiple opportunities to practice letter identification to foster mastery and automaticity, in a mix of timed and untimed activities. For example:

- In Art With a Purpose, students color a letter, a word starting with the same letter, and a picture of the word.
- In Free the Aliens, students identify the correct alphabet letter to free aliens trapped in a crater before time runs out. The speed of the game adapts based on how the student performs.
- In Underwater Adventure, students gather underwater treasures by clicking bubbles that contain the correct alphabet letter.
- In Recognize Letters, students identify the correct alphabet letter to turn a caterpillar into a butterfly.
- In Sort Count, students sort capital and lowercase letters on bouncing balls.

Free the Aliens

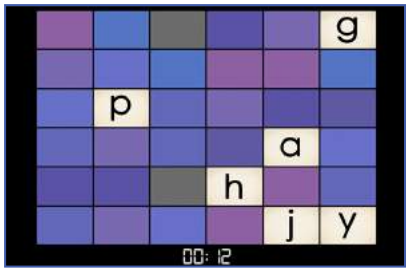
Underwater Adventure

As students learn to identify letters and letter names, they practice writing the letters using a mouse or directly onto a tablet. For example, in Letter Shapes and Sounds, students see the uppercase and lowercase letter F. They say the letter name, trace the letter shape, and hear a word that starts with that letter. The letter is then associated with a fish that starts with the same letter and sound.

Older students who need additional practice with letter identification are provided with a different set of age-appropriate activities. For example:

- In Alphabet Action, students see an uppercase and lowercase letter, say the letter name and sound, hear words that start with and contain the letter, and then write the letter.
- In Alphabet Blackout, students click tiles on a board to identify the alphabet letter they hear spoken. Each time students click the correct tile, the tile turns black. Students try to turn the entire board black before time runs out. Students then review any letters they missed.
- In Alphabet Quiz, students click on letters presented in a row to identify the alphabet letter they hear spoken. Each time students click the correct letter in the row, the row disappears. If students click the wrong letter, the row turns a different color. Students then review any letters they missed.

Alphabet Blackout



After introducing the letters of the alphabet, Imagine Language & Literacy teaches the 44 sounds in the English language and the 70 most common ways to spell those sounds. The program offers a clearly defined curriculum sequence of letter-sound relationships, starting with simple continuous sounds that are easy to blend (/d/, /m/, /s/, /f/, /r/, /n/, and /l/), followed by short and long vowel sounds. Lessons are sequentially ordered to begin with initial sounds, followed by ending sounds. After learning individual letter-sound associations, students study silent consonants, blends, and diagraphs (*ch-, kn-, ph-, sh-, th-, wh-, wr-, -ch, -ck, -sh, -ss, -tch*) before moving on to study vowel combinations (e.g., *ee, ay, ai, oo, ue*) and r-controlled vowel combinations. As students learn letter-sound correspondences, they are shown a mouth model and are encouraged to repeat the target sounds.

Phonics rules are taught through engaging videos and interactive activities that provide practice in the letter-sound relationships students have learned. For example:

- In Presenting Vowels, students learn the short and long vowel sounds by watching a video and listening to a song about each vowel letter, along with words that include the vowel sound.
- In Making Music, students learn the sounds that specific letters or letter combinations make. They then select a picture of a word that begins with the sound to collect musical instruments and make a song.
- In Recognize Letter Sound, students associate a specific letter sound with a letter or letter combination. They hear a letter sound, select a character face, and then choose which mouth makes the correct sound.
- In Vowel Drop, students practice associating vowels with their long vowel sounds. Students hear a long vowel sound, then click on falling wooden crates with words that include a long vowel sound. When they click the correct word for the spoken long vowel sound, a parachute opens at the top of the chair and the chair lands safely.

Recognize Letter Sound

Vowel Drop

- In Vowel Explorer, students hear a word with a short or long vowel sound and see a corresponding picture, then select the vowel that makes the vowel sound they heard.

Students are given explicit instruction and practice on how to use their knowledge of letter-sound correspondence to decode words by blending phonemes. They are taught how consonant sounds, vowel sounds, consonant blends, vowel patterns, diagraphs, and diphthongs come together to form words.

Imagine Language & Literacy provides a developmental sequence of instruction and practice with sound-spelling patterns, starting with CVC words, then progressing to CVCe, CCVC, CVCC, and CCVCC words. Students are also taught to use onsets and rimes effectively as they are taught word families.

As the students' phonics skills develop, they are taught to decode words with additional chunks of sounds, such as inflectional endings, prefixes, and suffixes. They also learn how to divide multisyllabic words into syllables.

- In Syllable Story, students are taught to first identify the vowels and then the consonants in a multisyllabic word to determine where the word should be divided.
- In Syllable Split, students read sentences containing multisyllabic words and then complete a process of dividing them into "chunks" (syllables), and then applying their phonics skills to decode the chunks and put them together. For example, they are shown the sentences, "Tom heard a sudden noise. His robot was broken." Focusing on the first syllable in *broken*, they are taught how to recognize the blend *br* and the *o*. Then, they identify the next chunk, *ken*. Finally, they put the chunks together to pronounce the word *broken*.

Imagine Language & Literacy builds automatic word recognition by explicitly teaching high-frequency words as sight words. Students are introduced to high-frequency words from the Fry word list, including both regularly and irregularly spelled words. They practice identifying and decoding sight words through engaging online activities. For example:

- In Note This, students learn how to read and understand high-frequency words in context sentences from books. They then use the words in sentences they write in their digital notebook.
- In Word Survivor, students hear a sight word and match what they hear to the correct safari hat or animal to move forward on a safari map.
- In Blaster, students practice recognizing high-frequency words through an interactive multimedia game. They hear a word spoken and maneuver a spaceship to blast the asteroid with the correct sight word on it.

Blaster Sight Words

Printable offline reteaching lessons help reinforce the sight words that students first learn online.

Imagine Language & Literacy teaches encoding skills. As students learn the various decoding skills described above, they engage in interactive practice hearing letter sounds (individually and blended), words with regular, common spelling patterns, words with inflectional ends and affixes, and multisyllabic words, and then identifying or generating their correct spelling. Students also practice spelling the sight words introduced in the program. They use on-screen letters as manipulatives to match the sounds of letters and words, practice writing and spelling words from dictation, and engage in writing tasks related to digital books they read. They also practice spelling through interactive games. For example:

- In the Spell Ball Showdown, students demonstrate their knowledge of phonograms or word families to spell words.
- In Ready to Spell, students practice spelling common words found in digital books that they will read later in the program and learn to use word family patterns to help spell high-frequency words.

Printable offline Teacher Resources include practice applying a spelling pattern to make new words.

Imagine Language & Literacy provides ample opportunities for students to apply their developing phonics and word recognition skills in focused activities and in the context of reading digital books. Students engage in focused phonics and sight word lessons, as described above, in preparation for reading a corresponding short digital Beginning Book with controlled, decodable text. They apply the same skills while reading the Beginning Book, first in read-aloud mode, then independently as they record themselves reading orally. For example:

- In one of the first lessons, students learn to associate the letters *a, m, s,* and *d* with the corresponding sounds /ă/, /m/, /s/, and /d/ to prepare them to read the book *Sam and Dad.* In the process, students learn to read and spell words such as *dad*, *sad*, and *Sam*.
- Later on, as students' decoding skills progress, they learn the -ai vowel pattern and learn phonics rules about vowel teams, in preparation for reading another Beginning Book. They practice decoding and spelling ai words in isolation (e.g., *pain, plain, mail*) and then read the book *Oh the Pain!*, a decodable text that features *ai* words.

The Beginning Book preparatory lessons address other reading skills and strategies in addition to phonics and word recognition, such as vocabulary and reading comprehension. Each Beginning Book unit ends with several reading comprehension questions. That way, students learn that decoding is ultimately about reading for meaning.

As students' sight vocabulary and decoding skills grow, they progress from Beginning Books to digital Transition Books—longer controlled, decodable texts. These follow the same pattern of instruction and practice focused on phonics and sight word development (and other skills), then applying the new skills while reading a corresponding Transition Book, followed by comprehension questions.

Beginning Books and Transition Books are also printable to enable additional reading practice.

Oral Language and Vocabulary Development

Language is the "socially shared code or system for representing concepts through the use of symbols and rules that govern how they're combined" (Owens, 2020, pp. 5-6). In oral language, the symbols are speech sounds and their combination to form spoken words. Oral language is comprised of phonology (the rules of speech sounds and syllables), semantics (rules governing the meaning of words and word combinations) and word knowledge (vocabulary), morphology (meanings of word parts), syntax (grammar rules), and pragmatics (social rules of communication) (Owens, 2020). Oral language skills are critical because research has shown that oral language comprehension ability, combined with word recognition skills, account for 65 percent or more of the variance in children's reading comprehension (Catts et al., 2005). Development of phonological skills was addressed previously in this paper. Research on the development of semantics and vocabulary, morphology, syntax, and pragmatics are addressed in this section.

Semantics

Semantic knowledge and skills needed for oral language development include word definitions, semantic features of words (e.g., "mother" includes both parent and female), and word relationships (e.g., synonyms and antonyms) (Owens, 2020). Students also need to learn to interpret figurative language because "[c]onversation, classroom teaching, and reading use figurative expressions frequently" (Owens, 2020, p., 342). Research shows that semantic knowledge predicts the ability to read words—both phonetically regular and irregular words—presented in isolation and in the context of sentences (Ricketts et al., 2016).

Vocabulary

Beyond the need for word knowledge to comprehend oral language and read words, research finds a reciprocal relationship between vocabulary and reading comprehension. Vocabulary instruction positively impacts children's reading comprehension because it enables students to make sense of a text, while listening and reading comprehension ability contributes to growth in their vocabulary because skilled comprehenders are able to deduce the meaning of new words they encounter from context (Wagner & Meros, 2010).

Given this reciprocal relationship, literacy experts advise that vocabulary development requires some direct instruction. In consideration of the types of words that might best be addressed through direct instruction, Beck et al. (2013) classify vocabulary into three tiers:

- Tier 1 includes basic words frequently encountered in early childhood that most students already know when they come to school. Beck et al. advise that these do not require direct instruction.
- Tier 2 consists of high-utility academic words that are used across content areas, more typically encountered in text than in conversation, and critical for reading comprehension.
- Tier 3 consists of specialized content-specific words that are important to build students' background knowledge for a specific lesson.

Research indicates that effective vocabulary instruction should:

- Focus primarily on teaching Tier 2 academic words with high utility across subject domains, that add "precision and specificity" to concepts, that have multiple meanings, and/or that have different uses in different contexts (Beck et al., 2013, p. 281).
- Introduce Tier 3 subject-specific words in the context of reading focused on that subject (Beck et al., 2013).
- Provide both clear definitions and instruction focused on the meaning of words in context (Graves, 2016).
- Focus attention on "critical attributes" of new words, and provide examples and non-examples for these attributes (Archer & Hughes, 2011, p.75).
- "Introduce or have students generate synonyms" for new words (Archer & Hughes, 2011, p. 82).
- Provide repeated exposure to words in a variety of contexts (NICHD, 2000).
- Teach word-learning strategies, including use of word parts (i.e., morphological structure [see below]), context, and the dictionary (Graves, 2016).
- Engage students in semantic mapping and semantic features analysis (Archer & Hughes, 2011; Graves, 2016).
- Capitalize on graphic organizers as learning aids (Archer & Hughes, 2011).
- Incorporate computer-based vocabulary instruction (NICHD, 2000).

Morphology

Morphology is the awareness and study of morphemes, "the basic units of meaning within words," and how words can be broken down into component units of meaning (Duncan, 2018, p. 226). There are two types of morphemes: free (independent root words) and bound (meaningful word parts that cannot function independently, such as prefixes, suffixes, and endings that indicate possessives, plurals, and verb tenses) (Duncan, 2018; Owens, 2020).

Research shows that strong morphological knowledge helps children decode and understand new complex words, and contributes to vocabulary development and reading comprehension (Duncan, 2018).

Syntax

Syntax refers to the grammar rules that govern the structure and word order of sentences in language (Owens, 2020). According to research, syntactic competence in early preschool is predictive of reading level at age eight (Gravani & Meyer, n.d.) and of oral reading fluency abilities at ages nine to eleven, independent of cognitive ability (Durand et al., 2013). Based on their review of research on improving syntactic competence, Gravani and Meyer (n.d.) offer recommendations for syntax instruction, including teaching the concept of subject and verb in sentences; targeting specific grammar rules in meaningful contexts, including analysis skills (e.g., identifying subjects, verb phrases, and objects in sentences, and different sentence types) and self-analysis skills (i.e., paraphrasing and self-questioning); and addressing signal words in sentences.

Pragmatics

Pragmatics refers to "communicative competence" (Pearson & De Villiers, 2005, pp. 3-4) to use language appropriately in various social situations. Research shows that children's development of pragmatics includes several component competencies:

- Developing speech acts (generating sentences for various communicative functions)
- Conversational skill (initiating, sustaining, and repairing face-to-face verbal conversations)
- "Adjusting one's language to fit the social context of the conversation" (Pearson & De Villiers, 2005, pp. 3-4)
- Developing skill at various "genres" of extended communication (e.g., narrating a story, explaining an event, giving directions, or persuading someone in an argument) (Pearson & De Villiers, 2005, pp. 3-4)

Results from correlational and experimental studies indicate that "providing children with opportunities to engage in high-quality conversations, coupled with exposure to advanced language models, matters for language development" (Petscher et al., 2020, pp. 5,273).

How Imagine Language & Literacy Provides Research-Based Instruction for Oral Language and Vocabulary Development

Imagine Language & Literacy provides direct instruction and practice designed to build students' semantic knowledge and skill, vocabulary, morphological knowledge, syntactic competence, and ability to apply pragmatics.

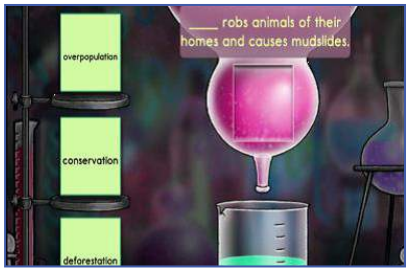
The program focuses on building both oral vocabulary and reading vocabulary, with an emphasis on Tier 2 high-utility general academic words and some Tier 3 subject-specific words selected from state exams, the Academic Word List (AWL) (Coxhead, 2000), and research by Marzano and Pickering (2005). The program teaches more than 800 thematically linked words and reinforces each word 8 to 12 times.

In academic vocabulary instruction, students are taught high-leverage, cross-curricular vocabulary. Each lesson begins with an assessment and practice of previously taught academic vocabulary. Students then begin learning a new set of words. They watch an engaging video that includes audio, photos, animations, and interactive text that shows the words in context. The beginning of the video is designed to get students' attention and activate prior knowledge. Each targeted vocabulary word is explained in student-friendly language, accompanied by pictures to illustrate critical aspects of the word. Next, the word is defined and used in a sentence. In subsequent lessons, students engage in repeated practice and demonstrate understanding of the newly encountered vocabulary words.

Students also engage in contextualized vocabulary instruction before reading a book or article. Students learn new words by hearing the word and its definition and are shown the word in the context of the book or passage. The program then engages students in online activities and interactive games to promote active learning of the new word. For example:

- In Vocab Lab, students are asked to connect with the word by answering a question about it.
- They are required to make an oral recording explaining the new vocabulary in their own words and review the accuracy of their explanation.
- In WordAtron, students hear a definition, play a matching game to apply their understanding, then fill in the blank in sentences by choosing the correct vocabulary word in context.

Vocab Lab



WordAtron

Imagine Language & Literacy addresses vocabulary research-based best practices as follows:

- Students learn clear definitions of vocabulary in child-friendly language through videos presented by peers (children in the same age range), with three unique videos that each explain the same word in authentic contexts. After students watch these peer-modeling videos, online activities prompt them to restate the explanation in their own words.
- The instructional videos and interactive practice provide experience with visual and oral definitions of words as well as examples and non-examples.
- Students also use graphic organizers focused on examples and non-examples of new vocabulary. These examples and non-examples focus attention on key semantic features of the words.
- Basic vocabulary instruction is grouped by category—e.g., animals, body parts, books, classroom, clothing, food, house, outdoors, people, places, playground, transportation, and weather—to focus students' attention on key semantic features. Semantic mapping graphic organizers also help build depth of understanding.
- The program emphasizes vocabulary development in the context of reading for meaning. Vocabulary lessons and routines are consistently sequenced as preparation for reading a leveled text in which the new word is used. Many practice activities focus on use of words in sentence context. For example:
    - In Word-A-Tron, students learn the meaning of important story vocabulary. They demonstrate their understanding of the word by placing it in a sentence. They also select other words that are closely related to the target vocabulary word.
    - In Vocab Dash, students use a monkey avatar to run along a path, collecting fruit and vocabulary words while avoiding obstacles. Students pass through gates where they select the correct vocabulary word in a sentence.
    - In Vocab Island, students read, say, and hear a new vocabulary word they find on a message in a bottle. They then read the word in a sentence and see a visual representation of it before choosing the correct definition. Then, students write their own message in a bottle using the new vocabulary words they've learned. They check their answer against a rubric before submitting.

- In Vocab Lab, students listen to a definition and context sentence, then answer a think-aloud question. Next, students help a character move across the screen to catch the correct image or synonym for the new vocabulary word. Then, they match the new vocabulary word or a synonym or fill in cloze sentences with the target word.
- Students learn that some words have differences in meaning depending on the context. For example, in Word Alert students learn that the word *specific* can mean either *exact* or *detailed*. A peer-modeling video defines the word *specific* as *precise* and contrasts it with the word *general*, which has the opposite meaning (e.g., the *general* location of Mumbai is in India, but the *specific* location is on the western coast of India). Later in the video, students learn that the word *specific* also can have a slightly different meaning related to stating one's particular purpose. In the video, a boy complains to his friend that he should have been more *specific* about what to wear to a party, because one boy showed up in a costume. In another lesson, students learn that the word *rock* can be a verb meaning *to sway* or a noun meaning *a genre of music* or *a stone*.

- When learning new words, graphic organizers focus attention on synonyms and antonyms, and other related words. When reading grade-level texts, students can access a pop-up glossary that provides both synonyms and antonyms of vocabulary words. Students also match new vocabulary words and their synonyms.
- Students are taught strategies to help interpret the meaning of figurative language (e.g., metaphors and similes). For example, in Figurative Finds, students learn that similes use the words *like* or *as* to compare things. Students are asked to create an image that demonstrates the simile *the pond was like a mirror.* They then examine passages, poems, and stories to see how authors use these comparisons to create mental images.

Figurative Finds

Students are taught how to use the context of a sentence in a text passage when they do not know a definition of a word. Imagine Language & Literacy also provides offline vocabulary instructional routines to extend vocabulary learning.

Fix It Up

Students are taught to identify word parts (e.g., roots, prefixes, suffixes) as useful tools for determining the meaning of unfamiliar words. For example, in Fix It Up, students are asked to chop off the word part *dis* from the base word *discover*. The instructional video teaches students that *dis* is a negative prefix that means *not* or *none*. When *dis* is added to the beginning of the word, it gives the word an opposite meaning. They also learn that *dis* can be used with some but not all base words. They then complete sentences with words containing the *dis* prefix.

In subsequent practice activities, students apply what they have learned about base words, prefixes, and suffixes to create new words.

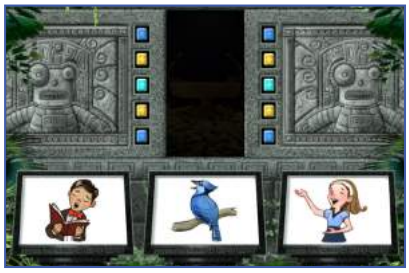
Imagine Language & Literacy explicitly teaches the role of syntax, and how the rules of grammar and word order shape the meaning of a sentence or passage. The program provides lessons and practice focused on parts of speech, and instruction goes beyond the basics to address proper nouns; singular and plural nouns (regular and irregular); personal pronouns; *to be* verbs; verb tenses, including simple present, simple and irregular past, and simple future; and comparative and superlative adjectives. In vocabulary instruction, high-utility Tier 2 words are taught in groups organized by part of speech.

Instruction also covers contractions, subject-verb order, question words, and correct word order in questions.

Grammar instruction is reinforced through interactive online practice activities. For example:

- In Listen Up, students hear several passages and then choose pictures to answer grammar questions in each passage. Each time they choose the correct picture, carved stone doors leading to an ancient treasure open farther. Students then review any questions they missed.
- History Hero offers practice by asking students to identify the correct conjugation of verbs. Each time students match the subject to the correct verb, they enlarge a famous landmark that has been miniaturized by an evil villain. Students then review the parts of speech or grammar concepts that they missed.
- In Time Seekers, students use their knowledge about subject and verb order in sentences plus semantic clues to fill in the blanks in sentences.

Listen Up



History Hero

In addition, students have opportunities to apply what they are learning through editing practice in context.

- After learning that in English, question words are placed at the beginning of a question and come before helping verbs or the verb to be, students edit question sentences that do not have the correct word order.
- In Excellent Editor activities, students apply a wide variety of grammar rules in context. Students are challenged to analyze text and correct grammar and syntax errors. For example, they apply what they have learned to edit the Fun Facts section of a newspaper.

Excellent Editor

The program also provides opportunities for applying self-analysis skills related to texts they are reading, as part of reading comprehension instruction (see the section on Reading Comprehension below for more details).

Imagine Language & Literacy teaches basic and fluent conversational phrases and how to apply them in context. Instruction includes two types of conversational phrases: English phrases for newcomers and phrases for general school readiness.

In Let's Talk and Daily Conversations, students watch videos to learn and repeat the following basic English phrases:

• Hello. Goodbye. • Come here. • What is this? • Please. Thank you. You're welcome. • What is your name? • Where is it? Here it is. • I like it. I don't like it. • I don't understand.	• It's your turn. • Excuse me. I'm sorry. • What do you want to do? • How's the weather? • Where are you going? • How are you? • What happens next?

Students build conversational fluency by learning to recognize and repeat basic English phrases in a variety of authentic contexts. For example:

- In Create a Comic, students make a comic strip by choosing the characters they want to use and then choosing the phrases that best fit the context of the situation.
- In Comic Talk, students choose a comic book character and record English phrases to fill in missing dialogue for their character.
- In Rock N Record, students watch a video and record English phrases. After recording, they listen to the phrases spoken in English and rate their recording.
- In Say What, students must demonstrate the ability to observe nonverbal cues and carefully listen to determine which phrase or social greeting fits in a given social context. They watch a series of videos that each have a missing phrase. For each video, they click on the phrase that belongs in the appropriate social setting.

Phrases introduced and practiced in these lessons address situations such as meeting new people, sharing personal information (e.g., where they are from, how old they are), discussing what people are doing, discussing food and drink, discussing the calendar, conversation involving counting, conversation involving time, discussing the weather, asking for and giving directions, and being polite during conversations.

The program includes offline classroom activities to help reinforce and extend the pragmatic skills learned online. For example:

- In Good Morning, students play a game to review common phrases.
- In My Own Calendar, students fill out a calendar and use it to review numbers and calendar vocabulary.
- In Names and Numbers, students role-play conversations about addresses and phone numbers.
- In Tell It Again, students listen to and then reenact a story.
- In Tell Me a Story, students use puppets to reenact a story.

Fluency

The National Reading Panel defines fluency as the ability to “read text with speed, accuracy, and proper expression” (NICHD, 2000, p. 3-1). Speed is how fast one reads, typically measured in words per minute. Accuracy is the percentage of words read correctly per minute. Expression, or prosody, refers to reading with appropriate tone, pitch, phrasing (appropriate pauses and changes in speed), and use of “punctuation to group words into natural units” (Marshall & Campbell, 2006, pp. 191-192).

Fluency is important because it is a strong predictor of reading comprehension in upper elementary school and beyond (Rasinki et al., 2011). In their review of research on reading fluency, Hudson et al. (2005) point out that “inaccurate word reading can lead to misinterpretations of the text”; slow reading can make it difficult to “construct an ongoing interpretation of the text”; and ”[p]oor prosody can lead to confusion through inappropriate or meaningless groupings of words” (p. 703).

Research suggests that effective fluency instruction should:

- **Support accurate word identification** by teaching students phonics-based decoding skills and teaching them to "use both letter-sound and meaning cues to determine the exact pronunciation and meaning of the word that is in the text" (Hudson et al., 2005, p. 703).
- **Model correct expression** and fluent oral reading using read-alouds (Hudson et al. 2005; Marshall & Campbell, 2006).
- **Offer opportunities for practice** using repeated oral reading with models (Hudson et al., 2005; NICHD, 2000).
- **Use "assisted reading, choral reading, shared reading, paired reading, audiotapes, and computer programs"** (Hudson et al., 2005, p.708)
- **Encourage students to "record, listen, and rerecord"** to promote "independent judgment and goal setting" (Hudson et al., 2005, p. 711).

How Imagine Language & Literacy Provides Research-Based Fluency Instruction

Imagine Language & Literacy teaches a combination of word identification skills and strategies to enable students to accurately pronounce words in text and extract their meaning. In addition to the phonics-based decoding skills and sight word recognition instruction and practice discussed previously in the Phonics and Decoding section, **the program explicitly teaches word identification strategies focused on meaning cues**. These include identifying words in context; using syntactic, semantic word structure and analogy clues; and rereading text when it does not make sense upon the first reading. Meaning-focused word recognition activities include the following:

- In Understanding Context, students learn that context is the information that helps you make sense of what you read. They then practice discovering context clues in a sentence.
- In Context Clues, students practice identifying context clues while reading to determine the meaning of unknown words. Students search for context clues in text and then answer questions to practice finding the right meaning of unknown words. They also choose the correct word meaning based on the context they are given. For example, students read the following four sentences: "Alex and her grandma enjoyed a picnic lunch. They ate chicken, potato salad, and green beans. Alex thought the potato salad was delectable. She asked for more." Students learn that the phrase "she asked for more" provides a good context clue for the word "delectable." Alex would not have asked for more food if the food tasted bad. Students also learn to find the meaning of the word "bland" by identifying context clues that show cause and effect.

Context Clues

Offline materials also provide additional reteaching, challenge, or support. For example, in Word Detectives, students read short texts and use context clues to determine the meaning of underlined unknown words and write definitions of them. In one instance, students read the sentence, "The Artic is a desolate place where few people have ever been. The windswept ice stretches for miles." They then must write what the word desolate means.

Imagine Language & Literacy models fluent oral reading of digital books to help students learn to read text with expression, accuracy, speed, and comprehension. Digital books for grades K–2 have a read-aloud option featuring expressive, fluent narrators who provide excellent examples of prosody skills. This feature is available in all of the program's digital book series, including Read Aloud, Beginning, Transition, and Leveled Books.

Imagine Language & Literacy provides a variety of oral reading fluency practice, including record-listen-rerecord activities. The digital books with modeled oral readings allow for several different types of oral reading practice. Students can participate in:

- **Shared reading:** A group of students first follow along in their digital books, listening while the narrator reads aloud. Then students take turns reading parts of the story aloud.
- **Echo reading:** Students can listen to the modeled reading, then read the text aloud independently while recording their own voices. They can then listen to both their recording and the modeled reading, and compare the two. This helps them to self-correct, and they can record a second time if desired. Recordings are saved in the Student Portfolio for teacher review.
- **Repeated oral reading:** Students read a digital book multiple times: (1) reading along with the modeled oral reading; (2) identifying and reading the new words on each page; and (3) reading the entire book aloud while recording, then playing back their recording. Students are encouraged to listen and rerecord specific passages as many times as they like, until they are satisfied that they are reading the book fluently. To accommodate a range of learners, these passages are scaffolded with definitions, pronunciations, context, and reading strategies.

In offline Reteaching lessons, suggestions are given for a variety of reading strategies to improve fluency, including *choral reading* and *partner* (paired) *reading*.

To improve students' reading rate, students engage in Fluent Reader activities—regular, timed oral readings that measure the number of words read correctly in one minute. Teachers can easily save and document fluency growth across the school year using the Student Portfolio. The saved oral readings can also be shared with parents.

Reading Comprehension

The RAND Reading Study Group defines reading comprehension as "the process of simultaneously extracting and constructing meaning through interaction and involvement with written language" (Snow, 2002, p. 11). Based on Scarborough's review of research on the relationship between early language and literacy development and later reading abilities, she concludes that the ability to comprehend the meaning of a text requires readers to have strong foundational literacy skills plus strong strategic language comprehension skills (background knowledge, vocabulary knowledge, language structures, verbal reasoning, and literacy knowledge), and they must be able to execute and coordinate these skills fluently (Scarborough, 2001). Research on foundational skills, vocabulary, and language structures was addressed previously in this paper (see the sections on Phonological Awareness, Phonics and Decoding, Oral Language and Vocabulary, and Fluency). Research on other aspects of reading comprehension is summarized in this section.

Background Knowledge

In their synthesis of research from cognitive psychology, child development, learning and transfer, neuroscience, and other fields, the authors of *How People Learn* (2020) found that to process information, students need to connect new information and skills with preexisting experience and knowledge (National Research Council, 2000). However, in a review of research on "intentional instruction," Fisher et al. (2011) note that when students face a new, unfamiliar task, they are often unable to "marshal what is known to solve the unknown. Therefore, it is important to activate useful background knowledge when figuring out how to do something less familiar" (p. 370).

Text Structure

Research has firmly established that instruction focused on text genres and their underlying text structures improves reading comprehension and recall from texts (Duke et al., 2011; Shanahan et al., 2010). Key "elements of structure" in narrative texts include characters, setting, characters' goals, problem or conflict, plot or action, resolution, and theme(s) (Duke et al., 2011, p. 69). Important structures of informational texts include description, sequence, compare and contrast, problem and solution, and cause and effect. Based on its review of research on how to improve reading comprehension in the early elementary grades, a What Works Clearinghouse panel recommended teaching students "to recognize how a text is structured" in both narrative and informational texts, noting that because "authors structure texts in a variety of ways to get their point across … [r]ecognizing text structure can build students' understanding of what they are reading and improve their ability to recall it" (Shanahan et al., 2010, p. 7).

Comprehension Strategies

The National Reading Panel analyzed more than 200 studies on text comprehension instruction and found that teaching students comprehension monitoring skills is effective in improving comprehension (NICHD, 2000). Other research-based comprehension strategies found to be effective by the National Reading Panel include the use of graphic organizers to represent visually "the meanings and relationships of the ideas" in a text, answering teacher-posed questions and receiving informative feedback, summarizing main ideas, and readers generating and answering their own questions about the text (e.g., "what, when, where, why, what will happen, how, and who") (pp. 4-6, 4-44–4-46; see also Duke et al., 2011).

Regarding reader self-questioning, Mostow and Chen (2009) note, "Good questions help the reader infer and retain the meaning of the text" (p. 465). Self-questioning also helps students "develop a deep understanding" of what they read, apply "learned knowledge/skills to new problems and situations," "connect newly acquired information to prior knowledge," improve confidence in the subject matter, and develop a positive attitude toward learning (Yu & Wu, 2020, p. 3).

Duke et al. (2011) also identify "making inferences" as a research-based strategy "worth teaching" (p. 64). These researchers, and the National Reading Panel, all recommend providing reading experiences that require application of multiple comprehension strategies (Duke et al., 2011; NICHD, 2000).

As students progress through elementary school, they are presented with increasingly complex texts—that is, texts that contain increasingly dense information, intricate text structures, abstract concepts, unfamiliar vocabulary, multiple meanings, and complex sentence structures. Literacy researchers and experts Fisher and Frey (2018) suggest that text-dependent questions—questions that require students to provide evidence from the text as part of their responses—serve as scaffolds to help students engage in close reading of complex texts for better comprehension.

Verbal Reasoning

Readers need strong verbal reasoning skills—the ability to make inferences—which enable "reading between the lines" when ideas are not explicitly stated in a text (Scarborough, 2001, p. 98). Students need to be taught how to make *local* inferences about information integrated from "separate propositions" within the text and *global* inferences that require the reader to connect ideas "distributed throughout the text" that draw on information and background knowledge that is external to the text (Currie & Cain, 2015, p. 58). Inferential skills include understanding the relationship between pronouns and nouns, making "lexical connections" among "synonyms or words of similar meaning," making logical connections involving conjunctions, and identifying causal links between ideas or actions in order to comprehend text. When reading fiction, inferential skills include filling in gaps to interpret character motives, character traits and feelings, aspects of the setting, cause and effect relationships, and themes (Brown & Dewitz, 2014, pp. 70, 129-133).

How Imagine Language & Literacy Provides Research-Based Reading Comprehension Instruction

In Imagine Language & Literacy, explicit comprehension instruction is always provided in the context of reading online books and texts appropriate to students' grade and reading level. These readings give students experience with a diverse array of literary genres and with important topics across the curriculum that relate to academic vocabulary and language.

Students in PreK–2 start with Read-Along books—interactive, digital books that invite students to read along with a narrator and click to explore the illustrations and targeted vocabulary words. As primary students gain reading experience with digital books, they progress to Beginning decodable books they can listen to and read on their own, with questions that build strategies needed for literal and inferential comprehension. In these early grades, the program simultaneously provides critical foundational literacy instruction (phonological awareness, phonics and decoding, and fluency), while also supporting targeted vocabulary development and comprehension skill building. Second-grade students read Transition books that serve as a bridge to Leveled books, which provide teachers with Lexile levels to ensure that each student can work at the appropriate reading level. In grades 3–6, students continue to read Leveled books, in addition to text passages and Associated Press news articles.

Imagine Language & Literacy builds background knowledge as students read online books and texts. The Read-Along, Beginning, and Transition books introduce concepts, ideas, experiences, and related vocabulary that some students might not have encountered in their own lives. When students progress to the Leveled books, text passages, and news articles, the program builds background knowledge by pairing texts. The first text activates and builds students' background knowledge about a topic they will read in the second text in the pair. As students read the second text, they apply the background knowledge developed in the first text.

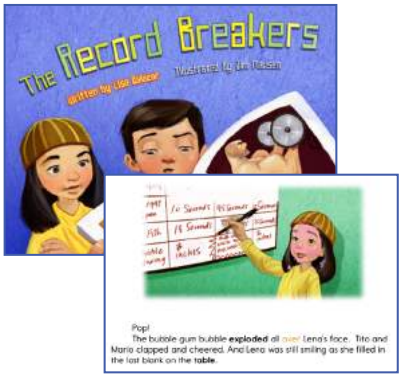
For example, in *The Record Breakers*, students hear definitions and learn about how to read the rows and columns in a table. Then, in *Picture This*, students read about how to organize data in a table, pie chart, or bar graph.

Each of the paired texts includes a graphic organizer or response journal that stimulates students to make connections between prior knowledge and new concepts. Before and during readings, think-alouds help students develop mental models that link new knowledge to what is known. For example, before reading a book, the title, author, illustrator, and cover are introduced. Then, a video presents a peer mentor showing how to use the title, cover, and self-questioning to make predictions and engage with what is already known.

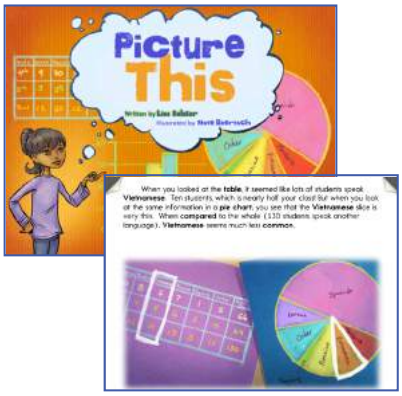
Imagine Language & Literacy provides explicit instruction on various text genres, their underlying text structures, and how to use this knowledge as an aid to comprehension. Students learn that authors create text with a particular purpose in mind and learn to distinguish two broad categories of text: literature and informational texts.

In activities such as Text Types, students explore different text types and learn about their common sets of features and conventions. Peer-modeling videos illustrate how each text type is used for a particular purpose. Literary text types include poetry, dramatic plays, fiction, fables, folk tales, and myths. Informational text types include biographies, news articles, and other forms of expository writing.

The Record Breakers



Picture This

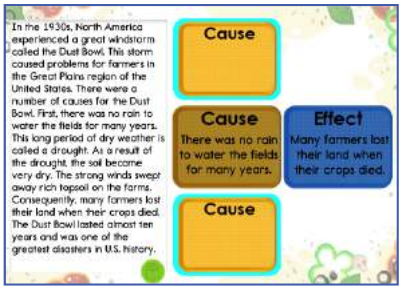


Text Types

Students practice using these structural features and conventions of text types to help them understand the author's purpose and to make use of the structure to comprehend and learn new information from the text. In the context of reading an informational text, students learn how to use the table of contents, headings, graphs, diagrams, illustrations, charts, and glossaries to learn about the topic. Students are also coached to look for words that signal various informational text structures, including description, sequence or chronological order, comparison, cause and effect, and problem and solution.

For example, in Special Effects, students learn that writers sometimes organize their texts to explain a cause and its effect. Using the signal words *cause* and *as a result*, students learn that the Dust Bowl was caused by a lack of rain, which made farmers' land very dry. As a result of the dry land, farmers lost their land.

Special Effects



Students also explore features of literary and narrative texts, including story elements, characterization, conflict, theme, voice, figurative language, and poetic structure. After learning about these features, they apply them as they read Beginning books, Transition books, and Leveled books; answer comprehension questions; and use graphic organizers.

Story Map

Imagine Language & Literacy explicitly teaches students a variety of comprehension strategies and provides opportunities to apply these when listening to or reading texts. For emergent readers, the program uses Read-Along books to refine their listening comprehension. Students in the primary grades are taught strategies used by active listeners, then listen to the audio and follow along while a Read-Along book is read to them. After hearing the text read aloud, students are asked questions about what they learned from the book and are prompted to retell orally what the text said.

As students progress to reading online books on their own, they learn and practice general comprehension strategies and specific strategies most applicable to either literary or informational texts.

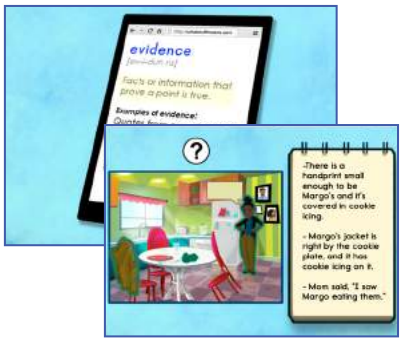
General comprehension strategies include:

- **Prereading strategies,** including previewing the text, accessing prior knowledge, formulating questions, clarifying understanding, setting a purpose, and making predictions.
- **During-reading strategies,** including visualizing, making connections, monitoring understanding, making logical inferences from details, rereading, questioning, and summarizing. Students learn how to identify and answer text-dependent literal and inferential questions as they read texts. They also learn to generate their own questions about the material they are reading. For example, students are taught to ask *who, what, why,* and *when* questions. As they continue to interact with texts, they are asked to summarize, clarify understanding, explain concepts, and elaborate.
- **After-reading strategies,** including comparing, synthesizing, and drawing conclusions.
- **Close reading** is a structured process that requires students to read passages three times. During the first read, students focus on gaining a general understanding of the text. They read a second time to examine the text's language and structure. In the third read, students make inferences, craft opinions and arguments, and make intertextual connections.

- **Citing textual evidence** coaches students to return to the text to find support for their answer. Students learn that to convince someone of their point, they need to gather evidence. A peer-modeling video teaches students about different types of evidence and how to gather it.

  Then, through a gradual release model, students are taught to apply what they have learned when reading a text. For example, in a narrative about a missing cookie, students cite and evaluate evidence to determine which character was likely to have eaten the cookie.

Citing Textual Evidence



- **Using graphic organizers** helps students organize their thinking and visually represent the meanings and relationships of the ideas in texts.
- **Paraphrasing and summarizing:** All leveled texts culminate in the Application Station writing activity, which provides students with opportunities to paraphrase or summarize key ideas in texts. Students use checklists to make sure they are using evidence to inform their answers.

Comprehension strategies for reading literature include:

- **Determining themes:** Students learn that the *theme* of a passage is the underlying message of the story. To identify the theme, students learn to track how the plot develops, what the conflict is, how the characters react to the conflict, and how that reflects the author's viewpoint. For example, students read the fable *The Ant and the Grasshopper*. The ant in the story prepares for winter by storing up food while the grasshopper just plays. However, when winter arrives the grasshopper runs out of food. The grasshopper sees the ant, who has enough food, and realizes he should have prepared for winter instead of playing. Students deduce the theme—that delayed gratification leads to long-term gain.

Determining Themes

- **Analyzing figurative language:** Students learn about various types of figurative language, including metaphors and similes. Students learn the literal meaning of a sentence and its figurative meaning, and learn to make connections between the two. Through a gradual release model, students are guided as they apply the concepts to text and then engage in independent practice.
- **Analyzing individuals and events over time:** Throughout Imagine Language & Literacy lessons, students analyze individuals and events over time through text-dependent questions and graphic organizers. Time lines, flow charts, and sequence graphics track the sequence of events in a story, as well as causes and effects, and help students understand how the events developed over time.

Comprehension strategies for reading informational texts include:

- **Determining the main idea:** Imagine Language & Literacy offers multiple digital lessons, interactive activities, printable reteaching lessons, and graphic organizers to teach students how to determine the main idea of a text. Students learn a three-step process for understanding main ideas and details. First, students learn to identify the topic by asking what the text is about. Then, they learn how to identify what the author is saying about the topic. Finally, students identify details that support the text's main idea.
- **Summarizing events and procedures:** Students learn to analyze various informational text structures. Peer-modeling videos teach students to identify and summarize the key ideas and details of a nonfiction text. The videos also explain how to ignore trivial or redundant information, how to prioritize the most important steps in a procedure, and how to select a topic sentence or write one if it does not exist.

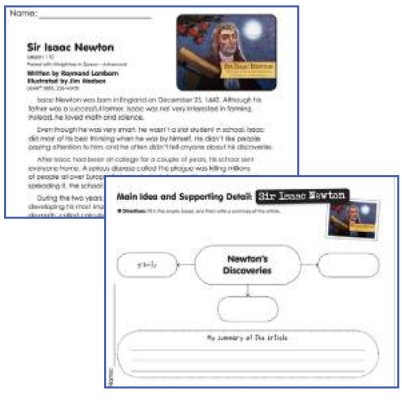
- **Identifying claims, reasons, and evidence:** Digital and offline materials teach students the basic components of an argument: *claims, reasons,* and *evidence*. Peer-modeling videos explain that claims are potentially arguable statements that answer the question, "What do I think?" Reasons are statements of support for claims that answer the question, "Why do I think this?" Evidence supports the reasons offered and helps compel audiences to accept the claims. Students practice identifying the words, phrases, and sentences that seem to highlight the author's central message, then identify patterns of evidence to determine and evaluate claims.
- **Comparing and contrasting texts:** Students are taught to compare informational texts by expressing similarities and differences in T-charts, Venn diagrams, and open written responses.
- **Integrating information from multiple media sources:** Imagine Language & Literacy offers multiple representations of content across a variety of media formats, including peer-modeled video, audio, technology-enhanced interactions, graphic organizers, and print. For example, students learn about scientists and scientific experiments described in a *peer-modeled video*. Next, they engage with the same concepts in online, *interactive practice*. Finally, they read an offline article about Sir Isaac Newton and use a *graphic organizer* to track his scientific experiments and summarize the article.

  After integrating the information from the various sources, students are asked to evaluate the different formats.

Peer-Modeled Video

Interactive Practice

Article and Graphic Organizer



Imagine Language & Literacy develops verbal reasoning skills that enable students to comprehend texts that require going beyond the literal meaning of the words. Students learn to apply a variety of inferential reasoning skills when reading texts for meaning, including:

- **Inferring implied information not explicitly stated:** Peer-modeling videos teach students to use background knowledge and clues from the text to make sense of what an author implies rather than explicitly states. For example, in literary texts, they learn how to consider text details in combination with what they already know about a topic to make inferences about character motives, character traits, settings, and themes.
- **Inferring the meaning of unfamiliar words:** Students learn to use available linguistic cues as well as facts stated in a text to uncover the meaning of unfamiliar words.
- **Local inferences:** Students practice making local inferences based on analysis of individual sentences. For example, in Newsbreak, students read a news article about a cat who was accidentally sold with a mattress set. They read the sentence, "Dufek wrote that Camo [the cat] was 2 pounds lighter after 10 days outside." They infer that the cat must have lost weight because it did not have access to food. The lack of access to food must have made the cat's time alone difficult. Students also answer inferential questions in Understand What I Read. They are prompted to think about what they already know in combination with what they are reading in Beginning Books and Leveled Books.

- **Global inferences:** Students are taught to make global inferences based on ideas expressed in different sentences or passages in a text. For example, in one lesson, a book states across several sentences that firefighters must use huge hoses filled with water and move fallen trees to put out forest fires. Since huge hoses and fallen trees are heavy, students can infer that firefighters must lift heavy things.
- **Inferring pronoun references:** Students learn that subject pronouns (*I, we, you, he, she, it, they*) and object pronouns (*me, us, you, him, her, it, them*) refer to people, places, things, and ideas and take the place of a noun. They also learn to use text evidence to make connections between pronouns and nouns.
- **Using synonyms to make inferences:** Students learn synonyms for already familiar words and use this knowledge to infer how information from different sentences in a text is connected.
- **Using conjunctions to make inferences:** Students learn that conjunctions connect a word to other words, connect a clause to another clause, connect a sentence to another sentence, or connect a paragraph to another paragraph. Students learn that some conjunctions help readers understand the sequence of events in a text (e.g., *then, before, when, while, since, once, as soon as, by the time*). Other conjunctions convey that one phrase or clause gives the reason or purpose of another phrase or clause (e.g., *as, since, because, so*). Still other conjunctions indicate contrasting statements (e.g., *but, however, whereas, although*). Students are taught to start with a sentence containing a conjunction and deconstruct it.

Principle 2: Offer multisensory instruction that meets the needs of diverse learners and engages and motivates all students.

Multisensory Instruction

Multisensory instruction teaches students by using two or more sensory pathways (e.g., sight, hearing, movement, touch). In their review of research and expert literature on structured literacy instruction, Farrell and White (2018) cite interdisciplinary evidence in support of instruction that integrates phonemic, graphemic, and morphemic knowledge—that is, multisensory instruction that "simultaneously associates auditory, visual and kinesthetic-motor … modalities" (pp. 58-59). Allen and Neuhaus (2018) reviewed research on multisensory reading instruction that found it to be "significantly more effective than traditional instruction for teaching phonological awareness, decoding skills, and reading comprehension" (p. 180).

Additional support for multisensory instruction comes from research from the Center for Applied Special Technology (CAST, 2011), which shows that "learners differ in the ways that they perceive and comprehend information that is presented to them" (p. 14). Universal Design for Learning (UDL) is an evidence-based framework for creating flexible instructional materials and assessments that address students with varying learning needs. UDL reduces barriers for all students by representing instructional information in different ways (e.g., not just relying on a single sense, illustrating concepts using multiple media) and offering students multiple ways of expressing what they know (CAST, 2011).

Motivation and Gamification

Research has linked student motivation to learn to better academic performance, "greater conceptual understanding," higher levels of "satisfaction with school," and greater self-esteem, compared to students who are unmotivated (Usher & Kober, 2012, p. 1). A Center on Education Policy review of the research literature on students' motivation to learn suggests that there are four contributing factors: a sense of competence to complete the learning task at hand; feeling that they are in control and have some autonomy over choices related to the task; tasks are perceived as interesting, relevant, or valuable to students; and activities strengthen their sense of relatedness to others in their social group (Usher & Kober, 2012, pp., 1, 8-9). The UDL framework recommends offering multiple ways of keeping students "engaged and motivated to learn" (CAST, 2011, p. 5).

A 2020 systematic review of empirical evidence on gamification by Zainuddin et al. (2020) found that "game-based elements such as badges, points, trophies, leader boards, avatars, and virtual gifts not only promote students' extrinsic motivation but also increase intrinsic value for learning." This is important because "an intrinsically motivated student is more likely to engage in depth with the materials and the learning process" (Zainuddin et al., 2020, p. 13).

How Imagine Language & Literacy Aligns with Research on Multisensory Instruction, Motivation, and Gamification

Imagine Language & Literacy takes strong advantage of multiple media to provide rich, multisensory learning experiences. Instruction and practice activities feature high-quality videos, animations, illustrations, voices, music and songs, and sound effects. Lessons also include manual signing, motor cueing, auditory attention activities, kinesthetic activities, visual matching, writing, and rhymes.

Examples of **the program's multisensory approach** include the following:

- When practicing phoneme segmentation, students engage in the task of making toys. They stretch plastic clay to mimic stretching out a word to hear the sounds.
- In the Print Concepts lessons, expansion activities encourage students to use sidewalk chalk, sandpaper letters, or a writing sandbox to practice writing letters.
- In Grammar, Vocabulary and Spelling reteaching lessons, students use game boards with spinners, sentence strips, matching cards and other game manipulatives.
- Reteaching lessons for Speaking and Listening ask students to use puppets.
- In a lesson on prepositions, students learn about positional prepositions and phrases (e.g., *on, in front of, under, across*). Then students are directed to compare sentences with prepositions to pictures representing the sentences and indicate when there is a match or non-match. They learn more about prepositions through graphic organizers, audio, and other interactive elements.
- In Learn to Recognize and Name Letter Sounds, students trace the target letter and say the letter sound. They see the letter, hear the letter sound, see a picture that begins with the letter sound (e.g., an apple for */ă/*), then click on the letter. They also see the word *apple* with *a* highlighted, then click or point to the *a*.
- In Free the Aliens, students practice recognizing letters quickly to build automaticity. They hear a letter name and must quickly click the corresponding letter shown in various places on the game board. The letter-recognition speed adjusts based on performance, so the student is challenged without being overwhelmed.

Free the Aliens

- In Blaster, students practice recognizing high-frequency sight words through an interactive multimedia game. They hear a word spoken and maneuver a spaceship to blast the asteroid with the correct sight word on it. This is a timed game with the goal of identifying the correct word as quickly as possible, to build automatic word recognition.
- In Galactic Goals, students practice newly learned, advanced academic vocabulary through a game with a space theme. They move their avatar around the screen to score space goals against another galactic team before time runs out. Students can add more time to the game clock by choosing the correct vocabulary word to complete a cloze sentence or by spelling the vocabulary word. If they answer incorrectly, they see a video illustrating the word's meaning. Students are also given video-based clues to help them spell the word.
- In Affix Action, students learn that there are important word parts called affixes that can be added to the beginning or the end of a word. A strategy is outlined for attacking big words: (1) realize you do not know the word; (2) chop the word into parts; (3) determine what each part means; and (4) check the context. Students learn about inflectional endings as well as affixes. As part of the Word Chop activity, they then practice chopping off affixes from words with multiple morphemes (e.g., for the word *unhelpful*, chopping off *un* and learning its meaning, then chopping off *ful* and learning its meaning).

Affix Action

The variety of ways in which concepts and skills are presented and practiced contributes to an experience that is impactful for diverse learners, consistent with the Universal Design for Learning framework. Multiple modes of representing information are provided in the same lesson (e.g., combinations of video and audio, text and voice, text and illustrations). The meaning of new vocabulary and unfamiliar idioms is often conveyed with pictures, in addition to text-based definitions and explanations. A wide range of graphic organizers (e.g., concept maps, T-charts, Venn diagrams, sequential graphics, and time lines) are used to highlight important ideas, compare and contrast concepts, represent relationships, depict chronology, and illustrate cause and effect. Students are also offered a variety of ways to show what they know, with question response formats that include multiple choice, essays and free-writing responses, annotation, voice recordings, charts, graphic organizers, and virtual manipulatives.

Imagine Language & Literacy incorporates research-based design elements that contribute to students' motivation and engagement. Thousands of interactive videos and animated activities deepen learning and challenge students. Fast-paced content, peer-modeling videos, lively songs, multimedia, and game-based practice activities make learning fun. The program also helps build students' sense of their own competence by providing strategic scaffolding and informative feedback that encourages persistence, resilience, and a learning growth mindset. (For more detail, see Scaffolding in Instruction and Formative Feedback, later in this paper.)

In addition, **Imagine Language & Literacy includes a game-like reward system to boost student motivation and sense of ownership.** Students who successfully answer questions can earn Booster Bits (points) to spend on customizing their on-screen avatar, visiting exhibits and playing games in the Imagine Museum, and leveling up to unlock new exhibits. Each visit to the Imagine Museum has a 90-second time limit so it does not take too much time away from learning activities. The better students perform in the learning activities, the faster they get to the Imagine Museum, and the more frequently they get to visit. A rewards screen displays the students' museum level, which is automatically updated.

Imagine Museum exhibits include:

- Character Builder, where students create and customize their own avatar the first time they visit the museum and unlock this exhibit.
- Mazel Cannon (unlocked the first time students visit the museum), where students see how far they can shoot a friendly character from a cannon.
- Monkey Business (unlocked at Level 7), where students customize a habitat for a monkey character.
- Smoothie Operator (unlocked at Level 13), where students make a smoothie for the monkey.
- Mazel Mine (unlocked at Level 13), where students customize a character, a cart, and a roller coaster, then go for a ride.

Imagine Museum Exhibits

Imagine Language & Literacy provides other means of engagement that are in alignment with the Universal Design for Learning framework. For example:

- Lessons make explicit connections between what students are learning and their experiences, making clear the practical relevance of the lessons.
- Lessons begin by presenting instructional goals and outlining the knowledge and skills students will be expected to demonstrate.
- On-screen instructors model self-reflection and self-regulation when one's initial strategy is unsuccessful.
- In Application Station, students engage in writing activities and monitor their own understanding by comparing their responses to a rubric.

Principle 3: Offer adaptive, differentiated instruction based on precise ongoing assessment, and provide educators with relevant data and actionable insights for teaching and learning.

Adaptive, Differentiated Instruction

Research finds that classrooms are "becoming increasingly academically diverse," with children manifesting different abilities, interests, and optimal ways of learning (Subban, 2006, p. 938). In this context, research supports differentiating instruction to address each student's unique learning needs (Subban, 2006; Tomlinson, 2014; see also Ankrum et al., 2020). Experts in teaching and learning also conclude that "thoughtfully changing instruction to support student learning during a lesson, known as adaptive teaching, is an important component of effective literacy instruction" (Ankrum et al., 2020, p. 71).

Formative Assessment

Tomlinson (2014) notes that implementing differentiated instruction requires "persistent formative assessment" to guide "both teacher and students toward essential goals" (pp. 4-5). A meta-analysis of multiple studies demonstrates that formative assessment—the process of using ongoing assessment to inform instruction—has a positive effect on student achievement, with teacher professional development and technology-based formative assessment among the most effective methods of implementation (Kingston & Nash, 2011, pp. 33-35). Research indicates that formative assessment is most effective for students when assessment data are used to clarify learning goals to students; continuously monitor and diagnose student performance relative to these learning goals; provide instructional feedback; make instructional decisions in response to students' learning progress; and involve students in their own assessment (National Research Council, 2012).

How Imagine Language & Literacy Provides Adaptive, Differentiated Instruction Supported by Ongoing Formative Assessment

Imagine Language & Literacy differentiates instruction for each student in several ways:

- For the online instruction, each student is assigned developmentally appropriate starting points across several literacy and language development curriculum domains, based on data from the program's Placement and Benchmarking system. For each domain, a student might work on skills that are at grade level; more complex, higher-order literacy skills; or needed prerequisite skills typically taught in earlier grades.
- As noted previously, scaffolds such as first-language support, helpful illustrations, read-aloud texts, and a built-in glossary are available as students need them.
- Also as described previously, formative feedback varies according to each student's response—praise for correct answers, and helpful hints and explanations for students who answer incorrectly.
- Extra practice is available for students who struggle with specific concepts and skills.
- Teachers can lead students in small-group or one-on-one lessons as needed, based on analysis provided in the Imagine Language & Literacy Teacher Dashboard and the Action Areas Tool. Printable instructional resources for these lessons are available online.

The Imagine Language & Literacy Placement and Benchmarking system and evaluation checkpoints drive the differentiation of the online instruction. The Placement and Benchmarking system measures student knowledge of print concepts, phonological awareness, phonics and word recognition, oral vocabulary, grammar, and reading comprehension. This formative assessment system is adaptive. The initial subtest delivered to students is selected according to grade level. Successful students then attempt subtests that assess more challenging literacy skills. Unsuccessful students attempt skill subtests that assess prerequisite skills. The adaptive nature of the assessment ensures that the online instruction and practice is at an appropriate level.

As students progress through the program's online lessons, built-in checkpoint assessments regularly evaluate their performance data. The data collected from these assessments inform sequencing adjustments and are used to determine whether and which instructional scaffolds should be provided to an individual student in upcoming lessons.

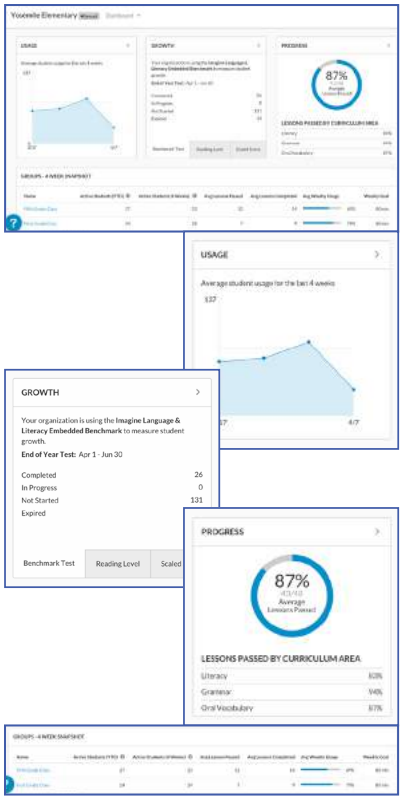
The Imagine Language & Literacy interactive reporting suite provides teachers and students with tools that present information on student progress and performance in simple, easy-to-digest formats. The reports help teachers make more effective decisions about how to supplement student learning in the classroom and how to best challenge students at the appropriate level.

- The Teacher Dashboard summarizes information on usage, progress, groups, and growth.
- The Usage area shows usage patterns over time and tracks against weekly and yearly usage goals. Teachers can quickly spot patterns where specific students may not be getting sufficient use of the program.
- The Progress area identifies which lessons students are working on and how they are progressing in the skills being taught. Teachers can view summary information for their whole class or drill down to an individual student's Skills Inventory.
- The Groups area presents a snapshot of recent activity and performance of a class or assigned student group.
- The Growth area compares Benchmark and Lexile scores across administrations of the Placement, Benchmark, and Reading Level Assessments at the beginning, middle, and end of the school year to illuminate changes in students' reading proficiency.

The reporting suite also includes the following features:

- The Portfolio provides a collection of student learning artifacts. Both audio recordings and constructed-writing responses can be reviewed online or downloaded to share with students and parents.
- The Action Areas Tool identifies skill areas where one or more students struggle, and indicates which students need additional intervention with each skill. This information makes it easy to group students for supplemental instruction. The tool also provides targeted printable resources for small-group or one-on-one intervention.

Teacher Dashboard



Action Areas Tool

- The Activity Explorer and Playlist make it easy for teachers to provide students with the small-group or individualized intervention most appropriate for them. Using the Activity Explorer, teachers find activities by navigating through a user-friendly menu or by word or phrase searching. The Playlist enables teachers to assign up to 12 activities to the whole class, a small group, or a single student. After students complete their playlist of activities, they return to their individualized pathway.

Finally, **Imagine Learning provides professional development on how to use data from the reporting system to drive instruction**. This is available via in-depth, in-person professional development sessions and on-demand, self-paced online courses from Imagine Learning University.

Principle 4: Integrate strategic scaffolding and formative feedback that makes instruction effective for a diverse array of learners

Scaffolding in Instruction

The term *scaffolding* is often used to describe instructional supports made available as needed—including prompts, questions as prompts, and modeling—designed to help students carry out tasks until they can do so independently (Molenaar & Roda, 2011). Scaffolding in technology-based learning systems is considered to be *adaptive* if it is based on diagnosis of the challenges preventing the student from completing the task, *calibration* of the appropriate supports, and *fading* when the supports are no longer needed. Research has shown that adaptive scaffolding benefits learning in a way that is tailored to the needs of each individual student (Molenaar & Roda, 2011).

Formative Feedback

Formative feedback is "information communicated to the learner that is intended to modify his or her thinking or behavior for the purpose of improving learning" (Shute, 2008, p. 154). Formative feedback helps close the gap between what the learner understands about a task and what needs to be understood to complete it successfully (Hattie & Timperley, 2007). In Hattie's (1999) seminal research synthesis of factors impacting achievement (which incorporated results from more than 500 meta-analyses), feedback was found to be one of "the top 5 to 10 highest influences on achievement," with the greatest effects where students were given elaborated feedback "about a task and how to do it more effectively" (Hattie & Timperley, 2007, pp. 83-84, citing Hattie, 1999).The National Research Council's Committee on Defining Deeper Learning and 21st Century Skills reviewed research on developing transferable knowledge and skills, and concluded that deeper learning for applying what is learned to new situations requires "extensive practice, aided by explanatory feedback" (NRC, 2012, p. 82). More specifically, for instruction focused on problem-solving, the committee recommended using "feedback techniques that highlight the processes of thinking rather than focusing exclusively on the products of thinking" (NRC, 2012, p. 10). Van der Kleij et al. (2015) completed a meta-analysis of feedback in computer-based learning environments, and found that elaborated, explanatory feedback had the greatest impact.

How Imagine Language & Literacy Aligns with Research on Providing Scaffolding and Formative Feedback

Imagine Language & Literacy incorporates a wide array of scaffolding to support language and reading comprehension, and uses data from built-in checkpoint formative assessments to determine which types of instructional support should be provided in the upcoming lesson(s). Scaffolds include explicit instruction, supporting illustrations, graphic organizers, repeated reading of texts, preteaching vocabulary words, an interactive glossary, repeatable directions, visual and auditory prompts, strategic questions, formative feedback (see more below), and the opportunity for extra practice as needed. As students become more proficient, scaffolds are strategically withdrawn, and students are gradually transitioned to independence. The program also provides digital books and guided reading experiences with audio scaffolding to support students as needed as they progress through increasingly higher reading levels. These audio supports include options to have a text read aloud by a narrator, text highlighting synchronized with the narration, to have individual words read aloud, and to hear the names of objects shown in accompanying illustrations.

The program also offers first-language support and translations in 15 languages (Spanish, Portuguese, Haitian Creole, Vietnamese, Mandarin, Japanese, Arabic, French, Korean, Cantonese, Russian, Hmong, Marshallese, Tagalog, and Somali). As students become more proficient in English, first-language support is strategically faded, so students can gradually transition to independence.

Imagine Language & Literacy provides immediate, item-specific formative feedback, including additional instruction and clues to help students understand the task at hand and know how to accomplish it. If students complete the task incorrectly, the explanatory feedback reminds them of key concepts needed to succeed. Typically, a student's first incorrect response brings a hint prompt, while the second incorrect response brings a more explicit explanation. Then, students are guided back to the reading to find the correct answer.

For example, in one reading comprehension activity, students read an article about an art museum and then are asked what might be in an art museum: machines, paintings, or insects. The correct answer is *paintings*. If a student selects the word *insects*, the program returns to the text and points out that the book shows a picture of statues and the author mentions art. Students are coached to "use their brain" and think about the different types of artwork. If the student is incorrect on the second try, the text is read aloud to the student, and they are told that the answer is *paintings* because it's a type of artwork.

This type of formative feedback encourages persistence, resilience, and a learning growth mindset.

Principle 5: Integrate research-based guidance to meet the needs of English learners.

Recently, two national education research organizations—the What Works Clearinghouse (Baker et al., 2014) and the National Academy of Sciences, Engineering, and Medicine (NASEM, 2017)—conducted reviews of research on effective instruction for English learners. The What Works Clearinghouse offered several evidence-based recommendations for teaching English learners in the elementary and middle school grades (Baker et al., 2014). NASEM summarized "promising and effective practices" for English learners in grades PreK–12. (NASEM, 2017, pp. 291-325). The following are recommendations for teaching English learners in the elementary grades, drawn from both sources:

- "Screen for language and literacy challenges and monitor progress" (NASEM, 2017, pp. 298-299).
- "Provide explicit instruction in five areas of literacy": phonological awareness, phonics and decoding, fluency, vocabulary, and comprehension (NASEM, 2017, p. 293).
- "Provide small-group instructional intervention" that targets the students' identified needs, based on assessment data (Baker et al., 2014, pp. 6, 59-61).
- "Develop students' academic language" (Baker et al., 2014, pp. 6, 13-30; NASEM, 2017, pp. 293-294).
- Provide "structured opportunities" to develop both oral and written English language proficiency (Baker et al., 2014, pp. 6, 31-58).
- "Provide visual and verbal supports to make core content comprehensible" (NASEM, 2017, pp. 294-295; also see Baker et al., 2014, pp. 32-36).
- "Encourage peer-assisted learning opportunities" (NASEM, 2017, pp. 295-296; also see Baker et al., 2014, pp. 31-52).

How Imagine Language & Literacy Provides Research-Based Instruction that Meets the Needs of English Learners

Imagine Language & Literacy screens for language and literacy challenges and monitors student progress. Students begin by taking an embedded placement test that screens for reading problems and places students at the appropriate starting point in the online curriculum. The program continues to monitor student progress throughout the curriculum and provides teachers and parents with up-to-date information through comprehensive progress reports.

As described in the previous sections of this paper, **Imagine Language & Literacy provides explicit instruction in five critical areas of literacy**: phonological awareness, phonics and decoding, oral language and vocabulary development, fluency, and comprehension. Lessons activate students' prior knowledge, establish a clear lesson goal and objective at the start of each lesson, present instruction in small, manageable segments, provide clear instruction with examples and non-examples, offer students opportunities for interactive practice, and provide immediate, formative feedback.

A notable feature is the integrated, user-friendly recording studio, where students can record themselves as they read digital books, compare their performance to a modeled oral reading, and rerecord their work if desired.

As described in the previous sections of this paper, **Imagine Language & Literacy develops academic language across a variety of instructional activities integrated with reading digital texts**. Following the placement test, students are automatically assigned to an appropriate vocabulary development level, with a heavy emphasis on high-utility general academic words and some subject-specific words. Students are first introduced to the sounds and spelling of a set of academic words. Next, they see visual representations of the words in a variety of contexts.

Then they use the words to create scenes. After multiple experiences with the words, students demonstrate their mastery by using them to complete cloze sentences. The targeted words are also featured in the corresponding digital books, many of which focus on science or social studies topics.

Imagine Language & Literacy provides structured opportunities to develop oral and written English language proficiency. As described in the previous sections of this paper, the program provides direct instruction and practice designed to build students' semantic knowledge and skill, vocabulary, morphological knowledge, syntactic competence, and ability to apply pragmatics. Explicit instruction is provided on various text genres, their underlying text structures, and how to use this knowledge as an aid to comprehension.

Imagine Language & Literacy provides visual and verbal scaffolds to help English learners develop proficiency in their new language. For example:

- The introduction to books and critical vocabulary are taught in ELL students' home language.
- ELL students working in English can access first-language support in 15 languages, which translates literacy skills instruction, targeted vocabulary, and procedural directions. As students become more proficient in English, first-language support is strategically withdrawn, and students are gradually transitioned to independence.
- In Discover Similar Sounds, students recognize initial sounds in English that are also used in their first language. Fun graphics depict images of words that begin with the same sound in both the first language and in English. For example, the phoneme /l/ is introduced with the word *lemon* in English and the word *león* in Spanish. Students are given opportunities to practice recognizing sounds that exist in both languages. Similar sounds are identified in all languages supported by Imagine Language & Literacy, and appropriate examples for each language are given. Since not all languages share the same common sounds with English, the activity is adapted for the specific first language. Directions for this activity are provided in the student's first language.
- The program also addresses English sounds that are *not* found in a student's first language (e.g., the /r/ sound in English, which is not found in Korean). Students receive instruction in their first language, and then the English-only sound is pronounced. Next, the program models several words beginning with the new sound. Then, a video recording of a mouth making the new sound is shown, so students can see how the lips and tongue move to produce the sound. After this instruction, students practice finding words that begin with the new sound.
- A series of activities builds on language commonalities to address rhyme in both languages. First, students learn about rhyme in their first language to build background knowledge. Then they are taught rhyming sounds in English, again with modeling, visuals, and interactive practice.
- Other scaffolds are provided to both English learners and native speakers, including illustrations, front-loading of vocabulary instruction in preparation for reading digital texts, audio support, an interactive glossary, instructional hints and feedback, strategic questions, and extra practice as needed.

Imagine Language & Literacy offers opportunities for small-group instruction and peer-assisted learning. Teachers can use the Action Areas Tool to view which skills require remediation and identify which students are struggling in similar areas so they can then be assigned to small-group interventions. Then teachers can access skill-specific printable instructional resources, including supplemental classroom activities, reteaching lesson plans, activity sheets, flash cards, and graphic organizers that can be used during the small-group sessions. These sessions offer opportunities for students to collaborate and help one another as needed. Teachers can distribute printouts of digital books or display them using a projection device, and then organize group discussions to help students better comprehend the text. Such classroom discussions enable emerging English learners to learn from their more advanced peers.

As described in the previous sections of this paper, Imagine Language & Literacy also provides simulated peer modeling on the computer screen, featuring animated characters and videos of peer-aged students offering think-aloud support for the development of vocabulary and comprehension strategies. The program also simulates partner reading, with the computer serving the role of the strong reader; then the student gets a chance to read aloud and become a stronger reader.

Conclusion

Imagine Language & Literacy reflects well-accepted, research-based best practices to accelerate reading and language proficiency for students in grades PreK–6. Students receive explicit instruction that deepens and accelerates their foundational reading skills, oral language development, and reading fluency and comprehension. They develop and learn to apply phonics-based word recognition skills, semantics, vocabulary, morphological knowledge, syntactical rules, and pragmatics. They develop fluency through exposure to models of fluent oral reading and a variety of oral reading fluency practice opportunities. Through a wide range of text genres, including both literary and informational texts, students build background knowledge and learn to apply knowledge of different text structures, comprehension strategies, and inferential reasoning skills to hone their ability to read with comprehension. The program capitalizes on multisensory, multimedia instruction, a game-based motivation system, and principles of Universal Design for Learning to engage learners and make learning fun and personally relevant for all students. By providing informative feedback and incorporating strategic scaffolding, learning is made more effective for a diverse array of learners, including English language learners, and the experience encourages persistence and a growth mindset. Adaptive instruction based on precise ongoing assessment meets each student's specific learning needs, and easy-to-interpret reports provide actionable insights that help teachers further differentiate instruction.

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