Research Base

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Why use it?

This resource is for teachers, administrators, and other educational decision-makers wanting to gain a more in-depth understanding of the research base behind the instructional design of *Reading Horizons Discovery*®.

What is it?

This resource provides an in-depth look at each of the instructional components of *RH Discovery* and why and how each component is designed specifically and intentionally to maximize student learning.

How to use it?

Use this resource to build an understanding of how the design and components of *RH Discovery* align with what current science tells us about reading development and effective instruction.

The Reading Horizons® Method

RH Discovery is a research-based foundational reading curriculum that uses the instructional principles of Orton-Gillingham and Structured Literacy. *RH Discovery* is a digital tool that streamlines instruction for teachers. It provides lesson content, resources, data, and differentiation in one place, making it easy for teachers to access what they need for reading instruction.

The Reading Horizons instructional method refers to a systematic, simple, and specific approach to teaching literacy in the English language. The method drives instruction and was developed by Charlotte Lockhart, a passionate Orton-Gillingham trained teacher from Illinois, nearly fifty years ago. The method is taught using multimodal techniques for student engagement and connection. A unique marking system helps students identify the patterns found in the English language that determine the pronunciation and meaning of words. The marking system is used to support students with phoneme-grapheme mapping during dictation practice. It is phased out as students progress to reading connected text but can be used as a scaffold to support students when needed. What makes Reading Horizons unique is the simple and comprehensive framework that allows students to experience early and sustainable success, which increases their motivation and confidence.

The research-based principles guiding how literacy is taught are as equally important as the content. From the scope and sequence to the scripting and routines for instructional delivery and implementation, *RH Discovery* has been designed to adhere to decades of research that highlights what has been shown to be most effective in supporting student acquisition of new skills and application of these skills across settings and context. The following section highlights these principles and provides users with the research base needed to feel confident that their literacy curriculum meets the needs of all students.

While the purpose of this document is to focus on components of the curriculum relative to instruction and practice, it is important to keep in mind that instruction and practice opportunities are determined by an assessment of skills, another key component of any high-quality instructional cycle. Additional information about the assessment of key components can be found in the **Assessment Guide**.

Instructional Principles

Orton-Gillingham

The Orton-Gillingham (OG) approach seeks to explicitly teach elements of language and facilitate automaticity in applying this knowledge to the decoding (reading) and encoding (spelling) of language (Sayeski et al., 2018). Features of this approach, established in the 1930s and 1940s, were further validated through subsequent research findings, including those from the National Early Literacy Panel (2008) and the National Reading Panel (2000). The key features of OG instructional practices leverage the findings of recent research on the value of synthetic phonics. Synthetic phonics teaches students to convert graphemes to phonemes and then blend the sounds to form words (NICHD, 2000). The principles of this approach have been shown to boost students' word reading abilities (Jeynes, 2008; Johnston, McGeown, & Watson, 2012; Johnston & Watson, 2004 as cited in Sayeski et al., 2018) when coupled with encoding instruction (Weiser & Mathes, 2011). *RH Discovery* takes these principles to provide teachers with a structured program for effective literacy instruction designed to benefit all students.

Structured Literacy

Structured Literacy is an approach to teaching reading and spelling that is highly systematic, explicit, and carefully structured. Curricula guided by the principles of Structured Literacy "emphasize the structure of language across the speech sound system (phonology), the writing system (orthography), the structure of sentences (syntax), the meaningful parts of words (morphology), the relationships among words (semantics), and the organization of spoken and written discourse" (Spear-Swerling, 2019). This approach, rooted in research, takes what is known about how reading develops and bridges what we know about this development to the practices in place for all learners.

Explicit

Any deep dive into the underlying principles of effective instruction will include the elements of explicit instruction and will identify instructional practices that contribute to student success. Anita Archer and Charles Hughes (2011) tell us that "Explicit instruction is characterized by a series of supports or scaffolds, whereby students are guided through the learning process with clear statements about the purpose and rationale for learning a new skill, clear explanations and demonstrations of the instructional target, and supported practice and feedback until independent mastery has been achieved" (Archer & Hughes, 2011).

In close relationship with explicit instruction is the gradual release of responsibility for learning from the teacher to the student. Following the teacher's initial explicit teaching and modeling, the responsibility for learning gradually shifts to students as they exhibit understanding and competence. Through guided and engaged practice, students actively apply newly learned skills in a way that will transfer, or generalize, to other settings over time. This method fosters independent and proficient readers, is rooted in scientific research, and acknowledges that the path from emergent literacy to advanced comprehension thrives on increasing student ability and autonomy under the guidance of a skilled teacher.

Systematic and Cumulative

The term *systematic* emphasizes the methodical and coherent nature of the instruction, where each component or concept builds upon the previous one. In cumulative instruction, students continuously expand their understanding and capabilities by adding new information to concepts they have already mastered. The research findings of the National Reading Panel (2000) highlight the critical elements of effective teaching. Their research underscores that "Systematic and Cumulative instruction involves building a strong foundation by presenting knowledge and skills in a logical sequence, ensuring that each concept builds upon the previous one." This approach acknowledges that

learning is an ongoing process, and each new piece of knowledge or skill is integrated with what has been previously learned. The *RH Discovery* scope and sequence demonstrates clear evidence of systematic and cumulative instruction.

Diagnostic

Diagnostic instruction supports the development of differentiated instruction for students through careful and continuous assessment. This approach ensures that students receive the specific support they need to overcome challenges and achieve success, as this type of teaching requires continuous monitoring of a student's level of mastery and functional use of individual concepts and then uses this diagnostic information to inform planning and adjust instruction as needed (Birsh & Carreker, 2018).

Additional information related to supporting diverse learners can be found in the **Special Populations Guide** and the **Multilingual Learners Guide**.

Pacing

RH Discovery aligns with state English Language Arts (ELA) standards that focus on reading foundations with an end-of-year mastery goal in mind. Our curriculum is designed to fit within the typical 180-day school year, allowing flexibility for assessment and additional teaching. By year-end, students will demonstrate a strong grasp of print concepts, alphabet knowledge, phonemic awareness, phonics, and fluency in line with ELA standards. The curricular content also offers opportunities to bridge to other ELA domains, such as vocabulary, comprehension, and writing. While the goal is for all students to master foundational skills within the standard year, teachers must be prepared to provide individualized support and intervention, as outlined in the ELA foundational skills standards, to help all students reach their potential. For a detailed scope and sequence of skills supporting pacing and planning for an academic year by grade level, click **here**.

Science Behind It All

Science of Reading

At the forefront of what drives the instructional components of *RH Discovery* is what we know about reading development. Dr. Louisa Moats tells us that this science of reading "is not an ideology, a philosophy, a political agenda, a one-size-fits-*all* approach, a program of instruction, not a specific component of instruction. It is the emerging consensus from many related disciplines, based on literally thousands of studies, supported by hundreds of millions of research dollars, conducted across the world in many languages" (Moats, 2019). The intent is to take this information about what evidence has shown to be the most effective approach to reading instruction and bring it to life in the classroom. Several of the most notable findings within this science have built the foundation of our instructional approach. These include the findings of the National Reading Panel (2000), Scarborough's Reading Rope (2001), and Ehri's Phases of Word Reading Development (1995). Each of these contributions to science helps build a solid framework for the overall design of *RH Discovery*. Additional research within the field is referenced in each section as it relates to more specific elements of the curriculum.

Learning Science

The principles of learning science, which draw upon cognitive psychology and neuroscience to deepen understanding of how students acquire and retain knowledge, inform *RH Discovery* instructional strategies and methods, allowing for an optimal learning experience for all students. John Sweller's Cognitive Load Theory (1988) underscores the importance of managing the cognitive load of learners, a key concept integrated into our curriculum design. This cognitive load theory was used to inform decisions around the pacing of instruction and types and

volume of practice. By incorporating research-backed strategies such as spaced repetition, retrieval practice, and the use of multimodal materials, we aim to enhance learning and retention in literacy skills.

Universal Design for Learning

Universal Design for Learning (UDL) is an educational framework "to improve and optimize teaching and learning for all people based on scientific insights into how humans learn" that emphasizes providing multiple means of representation, engagement, and expression" as described by the Center for Applied Special Technology (CAST) (n.d.). This approach emphasizes providing all students, including those with diverse learning needs, with equitable access to high-quality education. When applied to the *RH Discovery* foundational skills curriculum, UDL ensures that instructional materials and strategies are flexible and adaptable, accommodating the varied needs of learners. UDL research recognizes that learners differ in their preferred modes of acquiring and processing information. This research advocates for multiple means of representation, engagement, and expression.

Research-Aligned Instructional Practices

Students enter kindergarten during the earliest phases of word reading development. In these early phases, as identified by Linnea Ehri (1995), it is clear that early instructional practices cannot leave out print concepts or alphabet knowledge. *RH Discovery* provides students with an appropriate introduction and ample practice in alphabet knowledge and print concepts, particularly in the early stages of the curriculum. Subsequent instruction continues to align with what students need to progress through the phases of word reading.

Print Concepts

Through early exposure to books, writing, and environmental print, students often arrive at school in the earliest phase of word reading with a basic grasp of print concepts, a cornerstone of early literacy. As they engage in initial reading experiences, typically during preschool and the early grades, they gradually develop a deeper understanding of print concepts. Print concept skills often develop prior to any formal school experience in the pre-alphabetic phase of reading development. Young children demonstrate print awareness in many different ways—when they hold a book the correct way, flip through pages one at a time as they "read," see a familiar store's logo and "read" the name of the store, and when they scribble on a page and ask an adult to read what they wrote. These concepts lay the groundwork for reading and writing proficiency. Early print concepts predict later reading success, enhance reading comprehension, foster phonemic awareness, and support the understanding of the alphabetic principle while also contributing to vocabulary growth and improved writing skills.

As children enter school and shift into early alphabetic phases of reading development, print concepts continue to develop with instruction and practice. In early grades, standards emphasize print concepts such as reading left-to-right, top-to-bottom, and page-by-page. Children learn that print carries meaning and begin to understand that letters and words on a page represent spoken language (Snow, 1998) and that English text is read from left to right and from top to bottom. They also focus on the understanding words are separated by spaces and that these spaces indicate breaks in meaning (Justice, 2002). Later, emphasis shifts to the recognition of the distinguishing features of a sentence. English in *RH Discovery* provides instruction and practice to develop these concepts. Students are explicitly taught the letters in the alphabet at the start of the year, laying a strong foundation. Each lesson includes spoken and written language, furthering the connection between speech and print. As students progress beyond letters, they transition to decoding multiple letters to form sounds and words, and then decoding and encoding sentences, allowing for instruction in directionality and sentence features and structure. Through early decoding and dictation activities, students reinforce these concepts, making them readily accessible as they advance to more complex skills. The Dictation portion of each lesson and the Groups and Centers Routines provide intentional language support to foster students' print concept development. Whether reading or writing, daily instruction consistently reinforces these concepts.

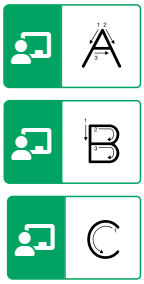
Alphabet Knowledge

Instruction and practice in alphabet knowledge occur throughout various components of each lesson in *RH Discovery*. Alphabet knowledge is a critical component in literacy development and encompasses letter recognition, letter formation, and letter-sound correspondence, all concepts associated with the partial alphabetic phase of reading development (Ehri, 1995). Strong alphabet knowledge is a powerful predictor of future literacy skills and is intimately linked with phonemic awareness, another foundational skill crucial for reading. (Phonemic awareness will be discussed in-depth in a later section.) Proficiency in alphabet knowledge enhances reading fluency, spelling, writing, and vocabulary growth, shaping children's overall language development. Research indicates that early proficiency in alphabet knowledge is a predictor of later reading success (Adams, 1990; National Early Literacy Panel, 2008).

In Kindergarten, students start with Alphabet Introduction lessons (Lessons 1 to 29) at the beginning of the instructional sequence, where they are introduced to each letter in alphabetical order. Following this initial introduction, letter instruction transitions to the context of Letter Groups (Lessons 30 to 61), with an added emphasis on blending letters. In Grade 1 (Lessons 1 to 18) and Grade 2 (Lessons 1 to 5), instruction begins directly with Letter Group lessons, but the pace varies between these two grade levels. Although many students in these grades may have acquired these skills in kindergarten, this introduction early in the sequence in Grades 1 and 2 offers teachers a valuable opportunity to gain an understanding of each student's alphabet knowledge to support instructional planning and decision-making. This review and spaced repetition of skills further support long-term retention. Additional information related to instructional sequence within Letter Groups and beyond can be found in the Phonics section.

Instruction in alphabet knowledge employs a speech-to-print (then back to speech) approach, moving from individual phonemes to corresponding graphemes, harnessing the relevance of our brains being hard-wired for speaking and the research findings of the strong association of proficient reading with the ability to identify, remember, and sequence phonemes (Moats, 2020). This instruction, anchored to a Sound-Spelling Wall, first places an emphasis on proper placement and articulation of each of the phonemes before quickly connecting the phoneme to its corresponding grapheme. Following this initial introduction in the Sound-Spelling Wall routine, more explicit instruction occurs for each letter focused on four critical components: the name of the letter, the sound of the letter, uppercase formation, and lowercase formation. This simultaneous introduction of the name, sound, and formation employs and activates multiple parts of the brain involved in automatic letter and sound identification. Furthermore, this supports the development of the alphabetic principle. We know from research that children's reading development is dependent on their understanding of the alphabetic principle, which according to Dr. David Kilpatrick (2015) "is the insight that there is a direct connection between the sounds of spoken language and the letters in the written words" (Kilpatrick, 2015).

The fluent recognition of letters hinges on a deep understanding of their distinctive features (Adams, 1990; Gibson, Gibson, Pick, & Osser, 1962; Gibson & Levin, 1975). This understanding propels the shift from teaching letter names and sounds to letter formation using a scripted description regarding the formation of each letter (i.e., verbal pathways). When students can verbally repeat each description, they can essentially visualize the letters in their minds and translate this mental image into physical movements. This enables the production of letters that are consistent and legible. The brevity of language used in the verbal pathways within *RH Discovery* is intentional. Recent research suggests that the variation in children's letter formation is a crucial aspect of their letter identification and formation learning (James & Engelhardt, 2012). By offering concise verbal pathways, we empower



Letter Identification
- Name of the letter
- Sound of the letter

Letter Formation
- Uppercase formation
- Lowercase formation

students to "create" rather than merely copy directions, allowing them to focus more cognitively on the act of forming each letter. Through repeated practice, students hone their ability to correctly form letters, directing their attention to the unique features of each letter shape. This practice reinforces letter recognition and enhances recall necessary for reading and writing (Cox, 1992; Slingerland, 1971).

Furthermore, during this letter formation instruction, students write each upper and lowercase letter and verbalize the name and sound associated with the letter. This multifaceted practice taps into various modalities, activating and connecting different parts of the brain involved in language processing. To further automatize letter identification and letter-sound knowledge, Reading Horizons provides students with various opportunities to apply new knowledge daily across various contexts within Groups and Centers Routines and on Review and Transfer Days.

Phonemic Awareness

Phonemic awareness, a foundational skill for proficient reading and writing, is critical for reading success and is recognized as a starting point in learning to read (NICHD, 2000). Phonemic awareness involves the ability to identify and manipulate individual sounds (phonemes) in spoken words (Liberman, Shankweiler, Fischer, & Carter, 1974) and stands out as one of the most reliable predictors of reading success (Langenberg, 2000; Muter, Hulme, Snowling, & Taylor, 1997; Stuart & Masterson, 1992). In 2000, the National Reading Panel (NRP) released findings from a meta-analysis emphasizing "phonemic awareness and letter knowledge as the two best school entry predictors of how well a child will learn to read during their first two years of school" (NICHD, 2000). The NRP concluded that phonemic awareness training, coupled with phonics instruction, reciprocally improves phonemic awareness, reading, and spelling.

Phonemic awareness serves as the essential foundation upon which fluent reading is built by connecting spoken sounds to the letters or letter combinations that represent them. Phoneme segmentation and blending are key reading and spelling tasks, and proficiency in these areas is essential. What does this look like in practice? Susan Brady (2020) recommends kindergarten instruction that emphasizes early phoneme awareness. In first grade, instruction should progress to ensure students demonstrate knowledge of each English phoneme and the remaining consonants and vowels taught beyond kindergarten, with integration of letter instruction sooner rather than later. Acquiring phonemic awareness and proficiency is a means rather than an end. Phonemic awareness is not acquired for its own sake but rather for its value in helping learners become aware of and use the alphabetic system to read and write proficiently.

Dr. David Kilpatrick (2015) acknowledged the work of the NRP, particularly regarding phonemic awareness. Additionally, Kilpatrick compiled and referenced the last 30+ years of reading research and highlighted vital points regarding phonological awareness and its importance to reading instruction. Phonological awareness is highlighted because it is the essential foundation on which everything else is built. Connecting spoken sounds to the letters or letter combinations that represent those sounds is a critical skill that, when applied automatically, without effort, is fluent reading. The tasks most associated with reading and spelling are segmenting and blending (Ehri, 2004). Students who demonstrate effective reading and spelling skills are able to segment a word into phonemes to facilitate spelling while also blending phonemes to read a word. The Daily Phonemic Awareness Lessons work quickly toward segmenting and blending to provide ample opportunity for students to master these critical skills.

The phonemic awareness activities at the start of each daily lesson in *RH Discovery* focus on developing these critical skills and promoting mastery. The scope and sequence of phonological awareness tasks in the Phonemic Awareness Warm-Up move quickly from the simplest of phonological sensitivity tasks to a focus on the more complex phonemic awareness tasks. For example, when isolating phonemes, students first isolate initial phonemes, the simplest of phoneme isolation tasks, before moving to the more complex isolation tasks where they are asked to isolate final and then medial phonemes. When blending and segmenting, students first blend and then segment consonant-vowel

(CV) words, followed by consonant-vowel-consonant (CVC) words, then consonant-consonant-vowel-consonant (CCVC) words, and so on. Furthermore, the scope and sequence with which these skills are introduced is based on research findings highlighting the hierarchy of phonological skill acquisition (Paulson, 2004). Aligned with the recommendations from the National Reading Panel that explicit phonemic awareness instruction should take no more than 20 hours of instruction per academic year, teachers begin each daily *RH Discovery* lesson with two brief phonemic awareness tasks designed to take no more than five minutes.

It is important to note that phonemic awareness instruction does not require the use of printed letters or words. However, a meta-analysis conducted by Bus and van IJzendoorn (1999) revealed that programs combining graphemes (letters) with phonemes (sounds) during instruction were more effective than phonemic awareness training alone. The phonemic awareness warm-up shifts into explicit instruction at the phoneme level through the Sound-Spelling Wall routine with an introduction to the corresponding grapheme. Additional, purposeful activities throughout lessons (e.g., phoneme-grapheme mapping tasks, Word Building Tasks, Eraser Game clues) leverage this finding.

Phonics

Reading Horizons employs a structured, research-based approach that teaches students how to decode and encode through phonics. This method helps students understand the relationships between written letters and spoken sounds, enabling them to read and spell words fluently. Blending sounds to form words accelerates letter-sound correspondence learning, enhances phonemic awareness, boosts automatic word reading, and significantly improves spelling and comprehension skills (Johnston & Watson, 2006). This approach emphasizes the vital connection between phonemic awareness and phonics skills, fostering strong reading and writing abilities.

The National Reading Panel highlights the effectiveness of phonics instruction in the early grades (kindergarten to second grade), which establishes the foundation for later reading success (NICHD, 2000). Early phonics instruction solidifies alphabetic knowledge and the understanding of the alphabetic principle. This section will discuss the progression from early alphabetic phases to more advanced word identification stages. The shift to phonics signifies a teaching of a deeper learning of English orthography.

It is worth emphasizing that, like other concepts discussed, phonics instruction is most effective when explicitly and systematically organized, progressing from simpler to more complex concepts (NICHD, 2000). A vast body of research supports explicit and systematic phonics instruction for all students (Ehri, 2004; McCardle, Chhabra, & Kapinus, 2008; Carreker et al., 2005; Joshi et al., 2002; NICHD, 2000; Ryder, Tunmer, & Greaney, 2007).

What We Teach

The phonics content of *RH Discovery* reflects the systematic and cumulative approach identified to support the needs of all learners. As mentioned previously, each grade level begins with Letter Group instruction (and kindergarten with Alphabet and Sound Wall Introduction), focusing on single letter-sound correspondences and their most common sounds. The pace at which each grade level's scope and sequence moves through each skill and how far they move into complex phonics skills varies based on the developmental appropriateness within each grade. The pace at which instruction moves and how much is included in one lesson varies intentionally with more time with each skill and a narrower focus per lesson in kindergarten as compared to grade 2.

The following considerations are included for the instructional sequence:

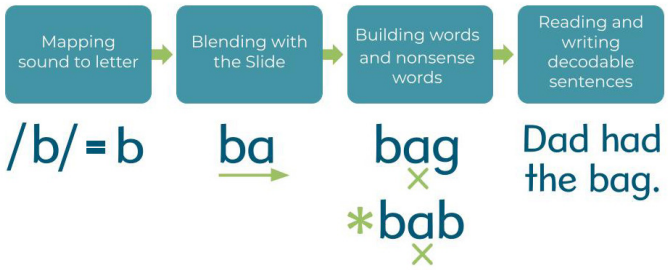
- **Utility:** Highly used letters and at least one vowel are introduced early on to support the immediate ability to build a variety of words. Vowels are introduced with their short vowel sounds so students can immediately begin reading and spelling closed syllables, the most common syllable type. More common graphemes for a phoneme are introduced earlier; for example, /s/ spelled with the letter *s* is taught before /s/ spelled as *c* (e.g., in the word *cent*).

- **Continuous Sounds:** Some continuous sounds (e.g., *m*, *s*) are taught early on for use as initial phonemes to support blending and aid with connected phonation.
- **Common Errors:** Phonemes and graphemes that are easily confused have been separated (e.g., *i* and *e*, *b* and *d*, *p* and *q*).
- **Rules of Orthography:** *C* and *k* are intentionally introduced last because students must also know all vowels to identify the correct orthographic pattern for spelling the /k/ sound at the beginning of a word.

After Letter Groups, instruction shifts to digraphs and then blends. *RH Discovery* teaches digraphs first due to the single sound they produce, then moves to blends made up of two phonemes. Double *l* patterns (e.g., *-all*, *-oll*, *-ell*, *-ill*, *-ull*) and glued sounds (e.g., *-ang*, *-ing*, *-ong*, *-ank*, *-ink*, *-onk*, *-unk*) follow, as they are letter combinations that introduce new sounds. The focus then shifts to syllable types, which are taught within the framework of phonetic skills. The Five Phonetic Skills are integral to the rest of the curriculum as students will learn in subsequent lessons how to apply them as they decode multisyllabic words. This framework also provides a systematic structure for students to learn the major orthographic rules for adding inflectional suffixes to words in a simple and efficient manner. The Five Phonetic Skills also introduce four of the six syllable types that are found in English words and prepare them to learn the Two Decoding Skills for syllabication. (The Two Decoding Skills will be discussed in the Word Analysis section.) These skills help students recognize predictable patterns in the English language that affect word pronunciation, including closed syllables, open syllables, vowel-consonant-*e* syllables (covered at the end of kindergarten), and vowel team syllables. Following the focus on the Five Phonetic Skills, students are introduced to *r*-controlled vowel syllables and final stable syllables.

How We Teach It

Instruction



Previous sections have identified how letter-sound correspondences are introduced first through Sound-Spelling Wall instructional routines, the bridge from phoneme level work to phonics. After the introduction of this new phoneme-grapheme correspondence and instruction at the individual phoneme level, the lesson quickly moves into decoding and encoding. The combination of decoding and encoding instruction in every lesson is purposeful and intentional. Converging evidence shows that integrated spelling and decoding instruction results in significant gains in multiple areas of reading, including word reading skills, fluency, and comprehension (Graham & Hebert, 2010; Weiser & Mathes, 2011).

This decoding and encoding instruction begins first at the body-coda level and then at the word level. In *RH Discovery*, the body of the word is called the Slide. The coarticulation involved in blending letters together to build words can be a challenge for beginning readers. The Slide has students using the initial bigram of a word (e.g., ba in bag) to build fluency with phonic decoding, the phase of reading development before the later and more advanced orthographic mapping phase. During the critical transition from the partial to full alphabetic phases, the use of this connected phonation approach allows students to connect one phoneme to the next, eliminates the schwa sound often pronounced during segmented phonation, and reduces the chances of forgetting earlier phonemes (Gonzalez-Frey & Ehri, 2020). The Slide supports students in joining the consonant and vowel sounds and is marked by placing an arrow under the two letters. The Slide arrow indicates two things: 1) that this letter combination is not a word, and 2) that students are to slide left-to-right in the direction that we read. At the onset of syllable instruction within the framework of the Five Phonetic Skills, the Slide is no longer used during instruction.

Following the decoding and encoding of Slides, instruction shifts to decoding and encoding real words and nonsense words. While the majority of words used in phonics instruction should be real words, using nonsense words provides a quick way to assess if students are transferring their knowledge of phonics to reading and spelling without relying on context or memorization. When students misread or misspell a nonsense word, it reveals gaps in their knowledge and provides valuable information for reteaching.

It should also be noted that teacher instruction also includes any new markings that will be used to support students in determining the pronunciation of a word. Additional information related to the marking system used to support students in determining pronunciation can be found in the **Word Analysis** section.

Practice

Following instruction, the lesson shifts to Guided Dictation. This multimodal process engages language processors in the brain. Students listen, speak, read, and write, involving all layers of language processing. Students hear, say, read, and write target phonemes, Slides, words, nonsense words, and eventually sentences containing decodable and high-frequency words. (Additional information about high-frequency words can be found in the **Word Recognition** section.) This additional practice includes newly taught skills interleaved with previously learned skills and is divided into both a decoding and encoding component. During Dictation for Decoding, a word is spelled for the students; they then write it down and read it aloud. During Dictation for Encoding, a word is dictated and the students use their phonics knowledge to encode the word. This process of guided practice at the word and sentence level allows students to further consolidate their learning.

The use of a context sentence containing the dictated word is of critical importance within instruction and the dictation process for decoding and encoding. The Four-Part Processing Model of Word Recognition (Seidenberg and McClelland, 1989), a simplified illustration of how the brain reads and recognizes words, highlights why this step in the dictation process is so important. Other leaders in the field, Dr. Marilyn Adams and Dr. Louisa Moats, have discussed this model at length and its significance in designing and implementing instruction. Guided by this model and research, we understand that effective instruction should address all four processors and improve word recognition. The connection between phonological representation, orthographic representation, and word meaning plays an important role in word recognition, which will be discussed in a later section.

Transfer

Our goal is to provide the necessary instruction and guidance for students to quickly apply or transfer the acquired skills while providing them with multiple opportunities to practice skills within connected text. This transfer to connected text begins during whole-group instruction and continues during differentiated small-group instruction with each Skill lesson. The materials include various tasks and activities designed to provide practice with differing levels of teacher guidance based on student observational data.

Word Recognition

Proficient reading is the ability to identify individual words quickly and accurately (Adams, 1990; Ehri, 1998; Perfetti, 1985; Rayner & Pollatsek, 1989; Snow, Burns, & Griffin, 1998). This is sometimes called *sight reading* or *word recognition*. Word recognition, the focus of this section, as opposed to word identification, refers to the instant and automatic retrieval of words. Words that are instantly recognized are called *sight words*. Strong literacy instruction works to provide students with the skills needed for all words encountered to become sight words. The process by which readers store their sight vocabulary for this effortless retrieval is called *orthographic mapping* (Kilpatrick, 2015). The shift from the phonic decoding of words, the focus of the previous section, to orthographic mapping signals a transition to the later phases of word reading development. While phonic decoding is a strategy for identifying unfamiliar words, orthographic mapping is the process of storing these words (Kilpatrick, 2015; Torgesen, 2004). In

most cases, once a word or pattern has been stored in long-term memory, it is there permanently. The human brain recognizes the word with ease and efficiency each time it is encountered, increasing reading fluency. (Kilpatrick, 2015; Torgesen, 2004)

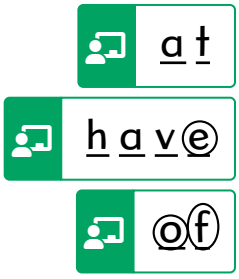
Reading Horizons uses what is known about this current theory to inform the approach to instruction. With research indicating the need for specific back-and-forth interactions between phonemes and graphemes, *RH Discovery* provides instruction to develop the components needed for this cognitive process to occur. Two of these key components include phonemic proficiency and letter-sound proficiency, both of which have been discussed in detail in previous sections. It is important to remember that orthographic mapping is a cognitive process used to store and remember words. It is not a skill, teaching technique, or activity you can do with students (Kilpatrick, 2019). What can be taught are phonemic awareness and phonics skills, which enable orthographic mapping, helping students to automatically connect each sound in a word to the spelling that represents that sound.

When discussing word recognition, there are several key ideas that research has proven to be ineffective in supporting this effortless retrieval. *RH Discovery* has also used this research to avoid practices that we know do not support the development of proficient reading. Simply put, research tells us that good readers do not identify words through visual memorization or use of context. Reading Horizons has intentionally avoided the use of any cues or prompts that might encourage a student to guess a word based on only a beginning sound or to use context or pictures when working with connected text. Using an approach that facilitates orthographic mapping is more effective than whole-word memorization because it is cognitively more efficient. A reader couldn't possibly memorize each of the hundreds of thousands of words in English. Not only would it take a really long time, but the human brain doesn't have the capacity to store each word, as a whole, in our long-term memory.

High-Frequency Words

How does understanding the storage and retrieval of words affect teaching high-frequency words with untaught orthographic patterns or irregular phoneme-grapheme correspondence? The acquisition of high-frequency words is crucial for developing reading and writing skills. Research suggests that a relatively small number of high-frequency words accounts for a substantial portion of text encountered in various contexts. In fact, studies have identified that 100 words account for approximately 50 percent of the words in print (Blevins, 2001).

In the *RH Discovery* curriculum, high-frequency words are called Most Common Words, and each lesson provides explicit instruction for one of these Most Common Words. These words span across grade levels and include most of the first 300 words from Fry's Instant Word List. Each *RH Discovery* lesson (beginning with Letter Group instruction) includes explicit instruction and practice of a Most Common Word. Most Common Words are grouped into three categories: decodable, not yet decodable, and irregular. If the word is decodable, students explain the phoneme-grapheme connection. If the word is irregular or not yet decodable, the teacher must support students with unknown or irregular sounds or spelling patterns. Most irregular high-frequency words have only one irregular spelling, so helping students recognize the patterns they *do* know and then focusing on the irregular spellings within a word is extremely beneficial.



This approach uses visual, auditory, and kinesthetic elements to engage students and enhance their understanding and retention of these words. Following teacher modeling, students have multiple opportunities to practice reading and spelling Most Common Words in isolation and in context. This helps build automaticity, leading to fluent reading. Most Common Words are included during Dictation, on the Whole-Class Transfer Card, decodable passages, texts, and books throughout the curriculum, so students have many opportunities to read and spell these words to support building automaticity. Through explicit instruction, repeated exposure, and meaningful application, students can develop automaticity in recognizing and using Most

Common Words, fostering their overall reading and writing abilities. For students requiring additional practice, there are also Most Common Words Toolkits that provide teachers with materials for additional instruction and practice.

Word Analysis

Word analysis refers to the breaking down of words to understand meaning and pronunciation. While word recognition, discussed in the previous section, involves the retrieval of known words, word analysis involves the analysis, or close study, of words to determine pronunciation and meaning. Proficient readers must have word analysis skills to support the identification of unknown words they encounter when reading.

We have discussed two major components in previous sections. Phonics involves the use of letter-sound knowledge to decode words and encompasses the study of phonemes and the grapheme or graphemes that spell these sounds. Graphemes include vowels, consonants, consonant and vowel digraphs, and trigraphs. Phonics also includes instruction on orthographic patterns that indicate how a phoneme might be spelled in a word, such as where it is positioned (e.g., /k/ spelled as *-ck* at the end of a word with a short vowel).

Syllabication, closely related to phonics, provides students with instruction in a strategy for word analysis and identification, specifically Anglo-Saxon words. Explicit instruction in syllable types was discussed in the Phonics section, including instruction in a marking system that provides a visual scaffold that supports the pronunciation of words based on predictable orthographic patterns. The marking system begins early on with instruction in the identification of vowels and moves to marking orthographic patterns, which students will later learn typically stay together in syllabication. The marking system then shifts to serve as visual cues for proving the pronunciation of the vowel or other orthographic patterns within the word (e.g., *ge* marked with a small *j* above the letters). This explicit instruction is followed by multiple opportunities for practice with these syllable types before moving into explicit instruction and practice in syllable division using Two Decoding Skills. These decoding skills allow students to apply learned strategies to unknown multisyllabic words. Identifying syllable types in multisyllabic words will help students read longer words accurately and fluently and aid in correct spelling.

Word analysis is made up of multiple components. In addition to the phonics and syllabication previously discussed (see Phonics section), another key component of word analysis is morphology. Morphology is the study of morphemes, the smallest meaningful units within words. Knowledge of morphemes enhances decoding, spelling, and vocabulary skills (Henry, 2010). In the early grades, the study of morpheme patterns includes base words, prefixes, and suffixes. Like phoneme-grapheme correspondences and orthographic patterns, the order for morpheme instruction for prefixes and suffixes is systematic and based on utility and complexity. *RH Discovery* begins with instruction in *-s*, *-es*, *-ed*, and then *-ing*. Sixty-five percent of more than 2,000 of the most commonly suffixed words contain these bound, inflectional morphemes (White, et al., 1989). Instruction with morphemes focuses on the meaning each of these morphemes brings and includes decoding and encoding instruction. The foundation of the Five Phonetic Skills and syllable types provides a familiar framework for which this encoding instruction occurs. Modeling and practice occur with marking and proving each base word before the base word is rewritten with the prefix or suffix. This helps students see how the spelling of the base word impacts how a prefix or suffix is added.

Instruction on each of these key components provides students with strategies to decode unknown words. When applied and transferred across multiple contexts, the use of these skills supports the orthographic mapping process that must occur for words to eventually be retrieved with automaticity.

Fluency

Fluency, another critical component of reading instruction, is defined as the ability to read accurately, quickly, effortlessly, and with appropriate expression and meaning. In his article, "Fluency Matters," Dr. Timothy Rasinski (2015) provides an even more in-depth connection: "Reading fluency is made up of two distinct components at two ends of the reading spectrum—automaticity in word recognition and expression in oral reading that reflects the meaning of the text. In a sense, reading fluency is the essential link between word recognition at one end of the spectrum and reading comprehension at the other." While word recognition facilitates orthographic mapping, fluency is the evidence that this cognitive process has occurred. Reading Horizons implements a well-structured, research-based approach to fluency development within its literacy curriculum to address each of these identified components of fluent reading. It systematically guides students in honing their oral reading skills, initially focused on accuracy and then moving to developing automaticity and prosody. Phonics instruction initiates the development of decoding ability and word reading accuracy, both of which improve a student's ability to recognize words with automaticity. With practice and repeated exposure to print, fluency develops and improves (NICHD, 2000). When fluency is fully developed, accuracy, rate, and expression function well, and attention can be allocated to comprehension (Wolf & Katzer-Cohen, 2001).

The early portions of each lesson heavily focus on accuracy to ensure that practice related to an increase in the rate of recognition (an indicator of automaticity) supports the facilitation of accurate orthographic mapping. Throughout instruction, the teacher models accurate pronunciation, decoding, and encoding of phonemes, their corresponding graphemes, and the application of new skills within words, sentences, and connected text.

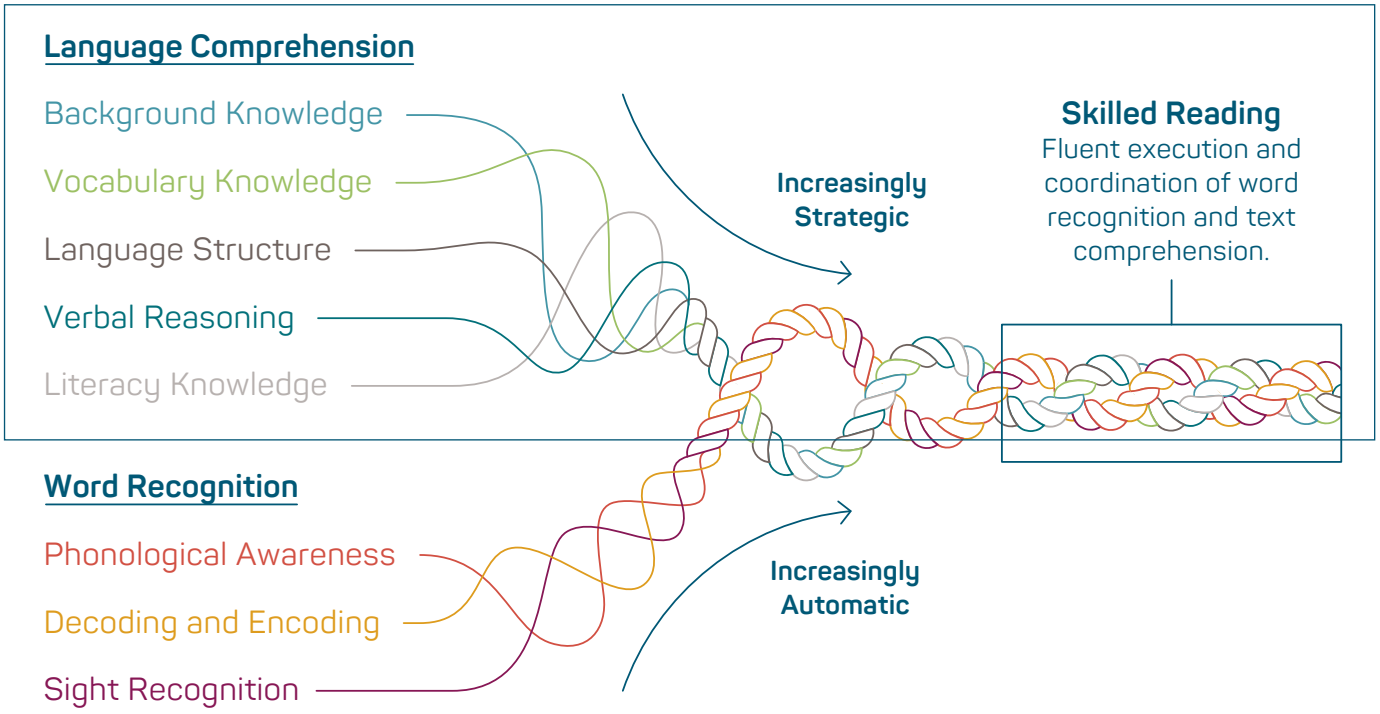
To become fluent readers, individuals must not only read words accurately but also quickly. The speed and accuracy with which single words are identified is one of the best predictors of comprehension (Hook and Jones, 2002). This fast and accurate retrieval of single words is called *automaticity* and is evidence of long-term retention of skills. As the scaffolds of word markings are gradually removed, students practice reading using learned skills, and this leads to accurate orthographic representations of words, resulting in automatic word recognition. (Additional information about the cognitive processes supporting this effortless retrieval can be found in the **Word Recognition** section.)

A final hallmark of fluent reading is prosody, or reading with appropriate stress, phrasing, and intonation. Fluent readers exhibit oral reading that closely mirrors spoken language in these elements. It is evident that without prosody, comprehension of text at the sentence and connected text levels can be significantly compromised. During the reading of connected text, teachers introduce and model prosodic reading with multiple opportunities to monitor and provide feedback and follow-up instruction as needed.

Within *RH Discovery*, students are taught what it means to be a fluent reader, with an approach that supports the development of accuracy and automaticity at the word level through fluent reading of connected text. This is complemented by prosody instruction as students read phrases, sentences, and connected text, preceded by adult modeling and practiced at each level to enhance reading fluency. During whole-group instruction, specific call-outs to accurate reading, reading at an appropriate rate, and reading with expression are explicitly stated in each lesson before students move to practice these skills through repeated readings of a text. Repeated reading is the process of reading a short, meaningful passage over several different attempts and until a satisfactory rate is reached. Research shows this practice has potential to support the development of reading fluency (Therrien, 2004). Additionally, other research-aligned practices, such as echo reading and choral reading, are used to support fluency development. Teachers can use provided word lists, sentences, decodable texts, passages, and books to tailor their instruction and practice to meet the needs of their unique group of students.

A Comprehensive Approach

The instructional components of *RH Discovery* provide a wonderful springboard into complementary instruction focused on the language comprehension strands of Scarborough's Reading Rope. Opportunities are woven throughout the curriculum, and resources such as Decodable Books and Lesson Toolkits can be accessed specifically to support the development of these upper strands, which are critical to reading development.



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