



Orthographic Mapping Tool Box

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Purpose

The purpose of this toolbox is to provide educators and parents with information and resources that can be used to help students achieve successful orthographic mapping

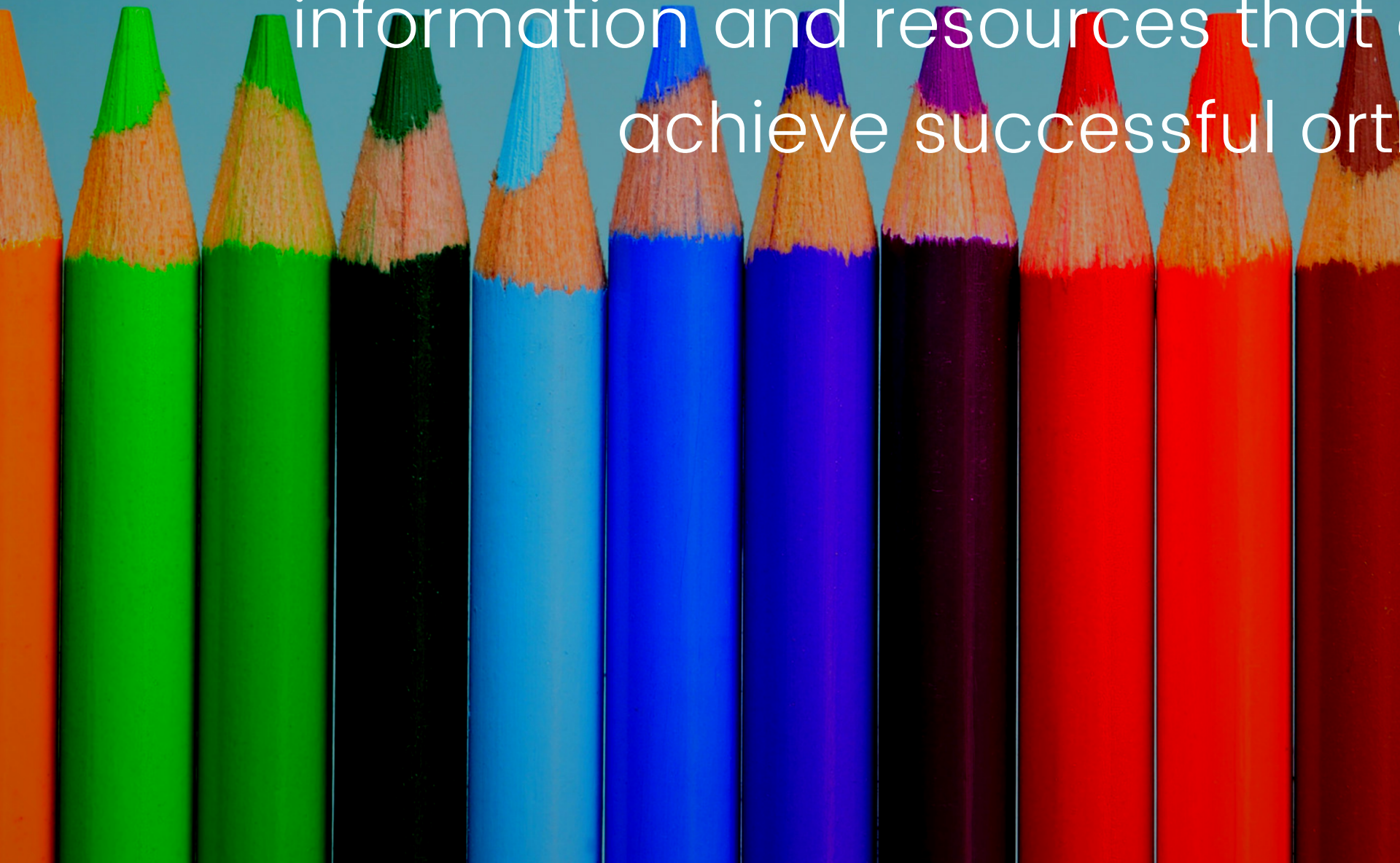




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What is Orthographic Mapping?

A proficient reader must be able to read and understand words with automaticity by retrieving familiar words from memory without conscious thought or attention. The process through which a reader's brain learns to recognize spellings and words automatically is called orthographic mapping (Miles, Ehri, 2019).





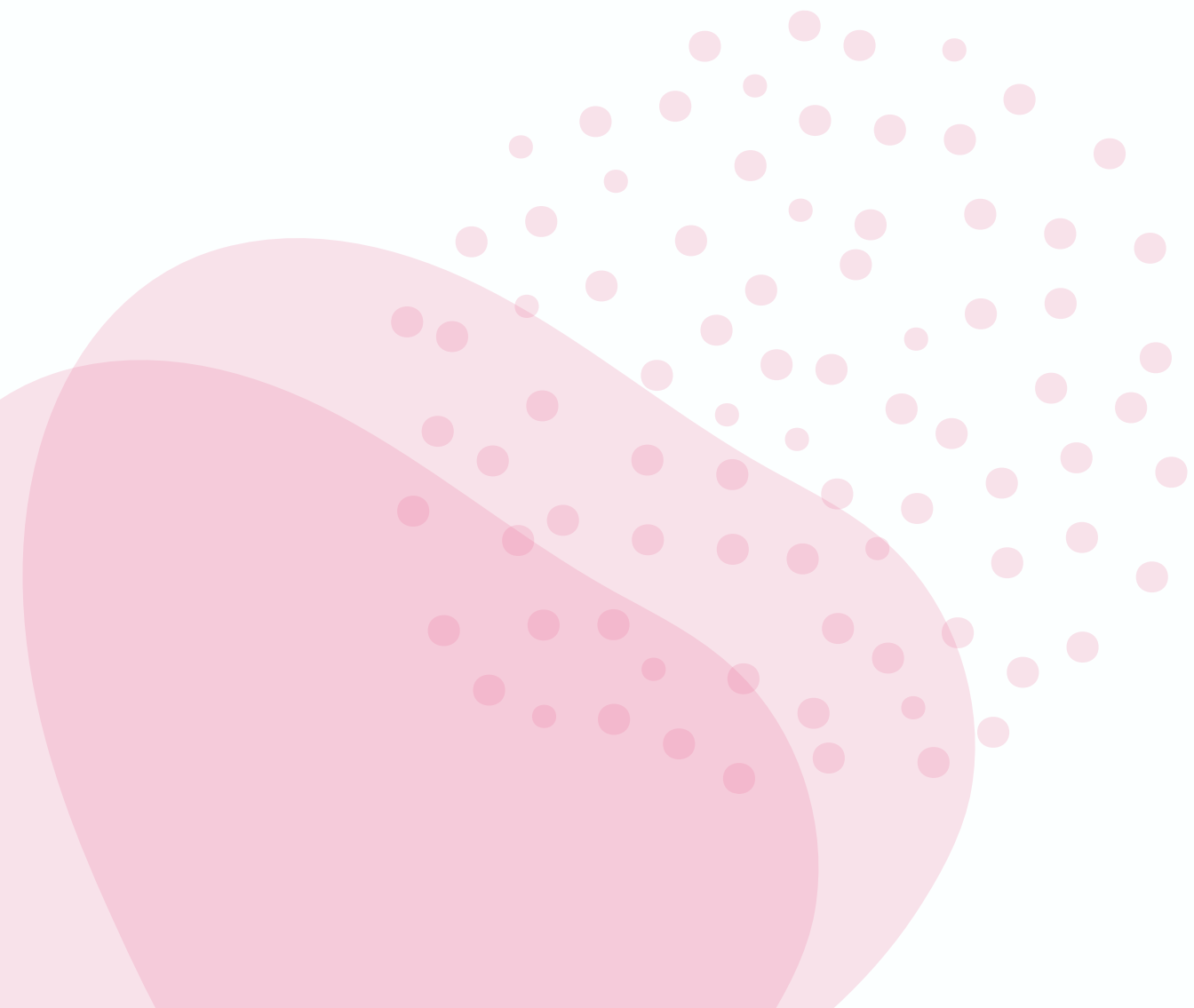
What is orthographic mapping?

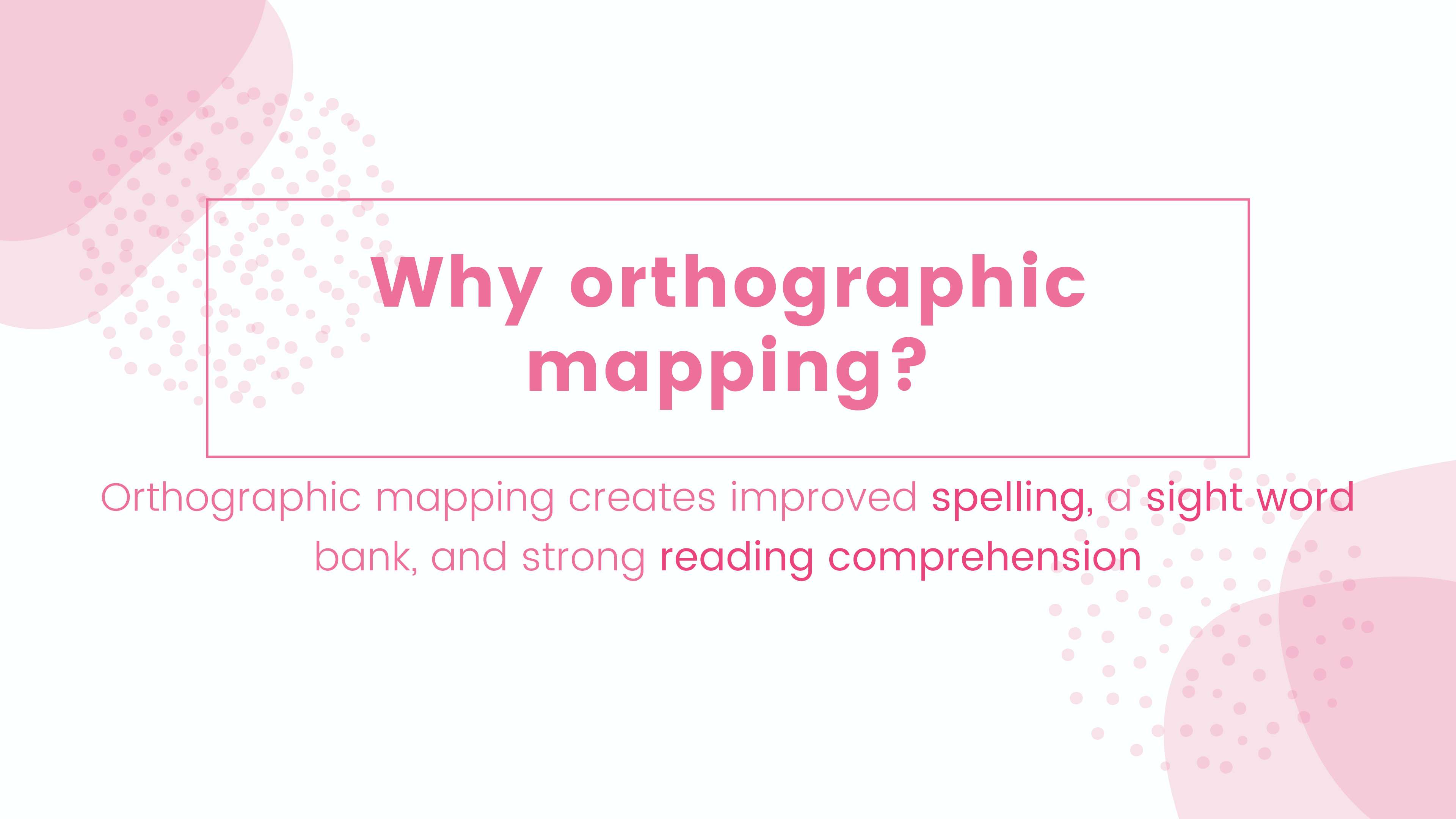
- Orthographic mapping is not completed through a visual memorization of entire words. Instead, it occurs through repeated practice in forming connections between graphemes (written letters) and phonemes (individual sounds). It requires knowledge of the relationships between written letters and spoken sounds.

How does orthographic mapping work?

It is a mental system that occurs in the fusiform gyrus region of the brain.

Words are filed away for later automatic access based on the word's meaning, pronunciation, and the relationships between the phonemes and graphemes (Castles, 2006).



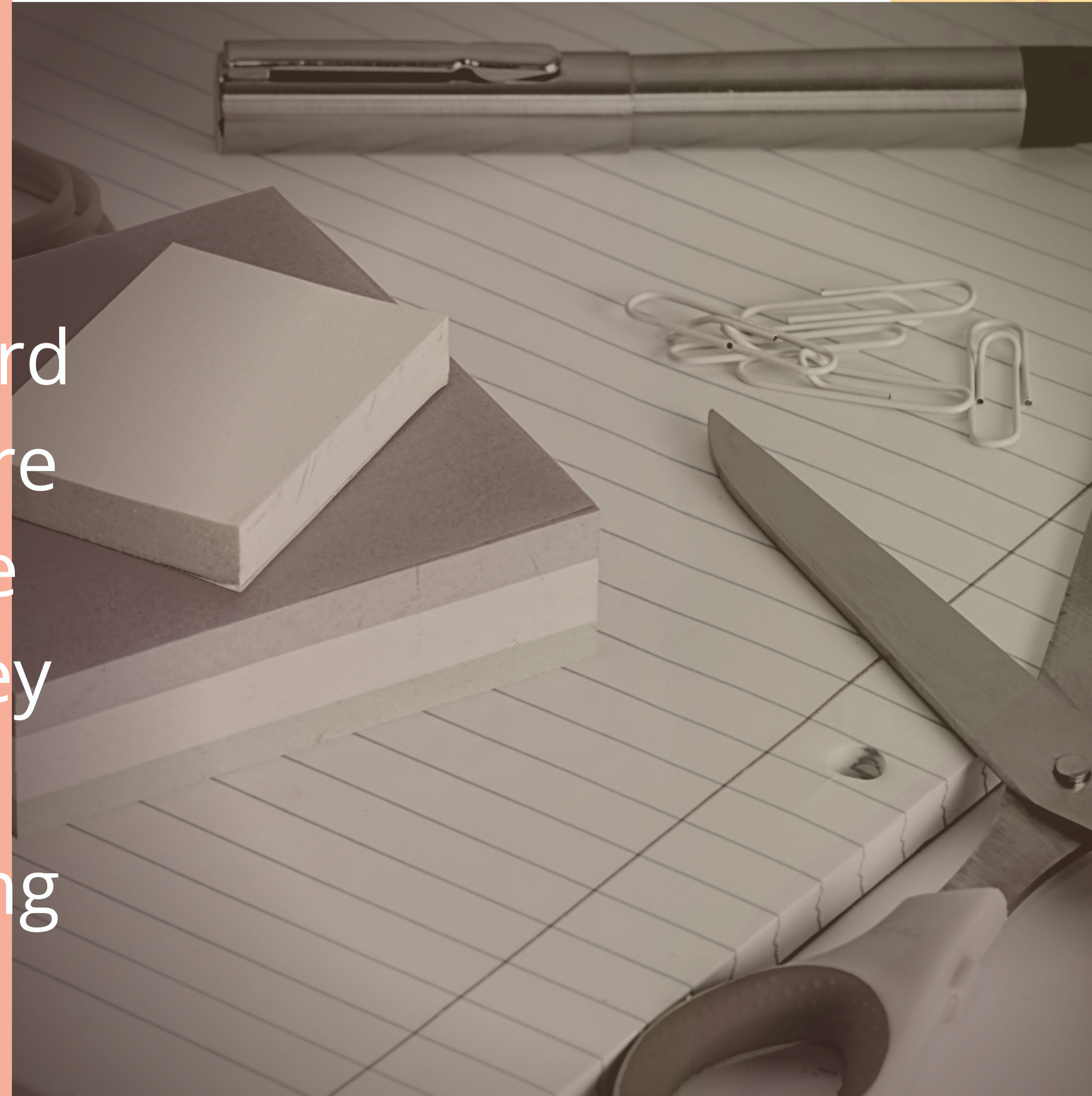


Why orthographic mapping?

Orthographic mapping creates improved spelling, a sight word bank, and strong reading comprehension

Spelling

Examining the spelling in correspondence with the pronunciation helps promote the connection between the spelling, pronunciation, and meaning of a word (Ehri, Wilce, 1987). When students are asked to pronounce the word while looking at the spelling in context they are orthographically mapping the word in the brain, making the spelling patterns far easier to recall.



Sight Words

**AN IMPORTANT GOAL OF
READING INSTRUCTION IS
TO HAVE ALL WORDS
STORED IN MEMORY AS
AUTOMATIC SIGHT WORDS.**

The process of orthographic mapping involves the storage of spelling patterns in the brain. These spelling patterns are then retrieved and used in the pronunciation and understanding of a word, thus creating a word that is understood by sight.



Reading Comprehension

THE AUTOMATICITY AFFORDED THROUGH ORTHOGRAPHIC MAPPING FACILITATES COMPREHENSION. WHEN A READER TAKES TIME TO DECODE INDIVIDUAL LETTERS THE MEANING OF THE SENTENCE CAN BECOME LOST. WHEN A READER RELIES ON SIGHT WORDS, MENTAL SPACE BECOMES AVAILABLE FOR CONSTRUCTING MEANING.

Prerequisite Skill

Phonemic Awareness

The knowledge that spoken words can be broken up into individual sounds, without direct connection to written letters. A child's knowledge of phonemic awareness allows them to segment, blend, and manipulate the spoken sounds in the pronunciation of words (Miles, Ehri, 2019). These skills can then be more easily applied to written letters and entire words.



Prerequisite Skill

Letter Knowledge

The connection between a grapheme and phoneme is what connects print to language. When students see visual words while also focusing on the pronunciation and meaning of the word it results in improved learning for children at a variety of ages (Adams, 2011). These results indicate that students learn to read, in part, by gaining knowledge of phoneme-grapheme relationships and correspondences. Therefore, instruction in letter knowledge can facilitate orthographic mapping and therefore the creation of a sight word lexicon.

For Educators: Phonemic Awareness Professional Development

Stahl, K. A. D., Flanigan, K., & McKenna, M. C. (2020). Emergent Literacy. In *Assessment for reading instruction* (pp. 81-110). New York: Guilford Press.

This chapter provides background in emergent literacy and phonemic awareness. It would be helpful for someone who needs clarification on what encompasses phonemic awareness.

Ideas of Beginning Reading

This website provides definitions of key terminology, examples of phonemes and phonemic awareness skills, and resources to find additional and timely phonemic awareness research

For Educators: Phonemic Awareness Activities

Phoneme Manipulation

Students practice blending, segmenting, isolating, and counting the individual phonemes in spoken words through the use of picture cards and teacher directed exercises.

Articulatory Features

Students are better able to recognize and produce phonemes when they understand the articulatory features (how a sound is created). The place and manner of articulation should be directly and explicitly taught. Watch [THIS](#) video for a review of the articulatory features of consonants. Watch [THIS](#) video for a review of the articulatory features of vowels.

[Phoneme Manipulation](#) and [Articulation Activities](#)

For Educators: Phonemic Awareness Assessments

Understanding what your students know is key in moving instruction forward. Phonemic awareness assessments should gauge your students' understanding of initial, final, and medial sounds as well as their ability to blend, segment, and manipulate phonemes.

Assessments

For Parents: What is Phonemic Awareness?

Phonemic awareness is simply the ability to recognize and produce individual sounds in spoken words.

[Phonemic Awareness Video](#)

For Parents: Phonemic Awareness Activities

Elkonin Boxes

A student is asked to say a word. They are then asked to say each individual sound. As they do, they move a token into a box. One token for each sound. The sounds can then be visualized and counted.

Word Play

Students are asked to match the initial phoneme (sound) of two words in a matching game. The cards can also be used to play "one card out" meaning the child must identify the word in a group of three that has a different initial phoneme.

For Educators: Letter Knowledge Professional Development

Miles, K.P., Ehri, L.C. (2019). Orthographic mapping facilitates sight word memory and vocabulary development. In D. A. Kilpatrick, R. M. Joshi, R. K. Wagner (Eds.), Reading developments and difficulties: Bridging the gap between research and practice (pp. 63–82). Springer.

This chapter focuses both on orthographic mapping as a whole and the role in which letter knowledge plays in a child's ability to neurologically map words.

Marina Mariol, Corentin Jacques, Marie-Anne Schelstraete, & Bruno Rossion. (2008).

The Speed of Orthographic Processing during Lexical Decision: Electrophysiological Evidence for Independent Coding of Letter Identity and Letter Position in Visual Word Recognition. J. Cognitive Neuroscience, 7, 1283. <https://libproxy.mcla.edu:2662/10.1162/jocn.2008.20088>

This article describes how words can be distinguished from one another based on the position of the letters and identity of the letters that compose the string within a word. The goal of study was to track the time of word/pseudoword determination to test for the role of position and identity. The study showed that words can be read based on purely orthographic properties.

For Educators: Letter Knowledge Explicit Spelling Instruction

Activities

When students are taught full spelling patterns and rules they are better able to read words as opposed to simply matching letters to isolated sounds. This success can be attributed to knowledge of phonetic clues which is essential for improved orthographic mapping (Ehri, Wilce, 1987).

The establishment of these symbols as pronounceable sounds associated with certain meanings is what allows words to be orthographically mapped.

Spelling Rules and Generalizations

Phoneme-Grapheme Correspondences

Students must have a full understanding of the relationships between phonemes and graphemes when reading and spelling. This can be accomplished through games and centers.

**Letter Recognition and Letter
Sound Correspondences**

For Educators: Letter Knowledge Assessments

Click [HERE](#) for access to assessments in both upper and lower case letter naming as well as letter matching.

Click [HERE](#) for access to assessments in identifying knowledge of the relationships between sound and symbols as well as in decoding nonsense words.

For Parents: What is Letter Knowledge?

Letter knowledge is understanding that letters have names and that these symbols stand for spoken sounds. There must be an understanding of the relationships between sounds and symbols.

Click [HERE](#) to learn more about emergent literacy including letter knowledge and the alphabetic principal.

For Parents: Letter Knowledge Activities

Embedded Picture Mnemonics

These are letter shapes drawn with a picture of a word that begins with that letter sound. For example, the letter 's' may be drawn as a snake.

Embedded picture mnemonics provide an easily memorable connection between the letter shape and letter sound.

Sound-Letter Mapping

Students need to learn to understand the connection between the sounds they speak and the letters they write. Connecting sounds and letters can be done using altered Elkonin Boxes. The student first marks each sound in a spoken word with a token. They then replace the token with a letter or group of letters. Take a look at [THIS](#) video to see sound-letter mapping in action.

Sound Letter Mapping



**For Parents: How do I know if
my student is on track?**

**Access to state and Common Core
standards to help gauge where your
student is in their literacy
development.**



The Four Stages of Sight Word Development

There are four developmental phases for sight word acquisition and spelling abilities as they relate to orthographic mapping. Instruction in phonemic awareness and letter knowledge can help a student move from one phase to the next.

Four Phases of Sight Word Development

Pre-alphabetic Phase

A child has almost no knowledge of the alphabetic system. They do not know letter names or sound connections. Children at this phase may read words but they are based on visual memorization or environmental context clues rather than a deeper understanding of the grapho-phonemic relationship.

Moving to the next stage requires instruction in letter knowledge and phonemic awareness.

Four Phases of Sight Word Development

Partial alphabetic Phase

A child can use knowledge, although incomplete, of letter names and sounds to read and spell words. Children at this stage often rely on the beginning and ending sounds to spell and read words. They particularly lack vowel spellings. (Ex: spoon may be spelled 'sn'.)

Instruction in medial and vowel sound-symbol correspondences can help a student reach the next phase.

Four Phases of Sight Word Development

Full Alphabetic Phase

Characterized by complete knowledge of the connection between letters in spelling and phonemes in pronunciations. The transition from partial to full alphabetic comes with the knowledge of all major grapheme-phoneme relations. Readers in this phase are able to learn sight words by forming complete connections.

Exposure to more words which become retained in memory allows the reader to transition into the final phase. Direct and explicit instruction in analyzing grapho-syllabic units in words can also help students reach the final phase of sight word development.

Four Phases of Sight Word Development

Consolidated Phase

This final phase is characterized by the student's ability to understand larger letter chunks and syllabication. Knowledge of the seven types of syllables must be secure by third grade in order to facilitate morphological structural awareness. That is, the ability to understand the uses of base words, prefixes, and suffixes. It is at this phase that a student has successfully orthographically mapped many words- creating a large sight word bank that can be accessed with automaticity-leaving room for comprehension. A student can also use their knowledge of larger letter chunks to spell.

Conclusion

Orthographic mapping is a comprehensive aspect of literacy development. It describes how a student can acquire sight words, learn to spell words, and come to understand the meanings of new vocabulary words.

Successful orthographic mapping paves the way for a student to read fluently and accurately which further enables them to make meaning from the text. Educators can help students achieve successful orthographic mapping through instruction in phonemic awareness and letter knowledge.

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