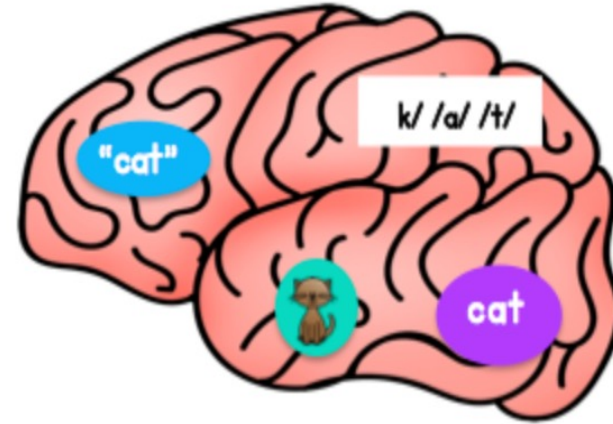


Orthographic Mapping

How Do We Learn New Words?



mdek12.org

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EDUCATION

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1

ALL Students Proficient and Showing Growth in All Assessed Areas



2

EVERY Student Graduates from High School and is Ready for College and Career



3

EVERY Child Has Access to a High-Quality Early Childhood Program

EVERY School Has Effective Teachers and Leaders

4



EVERY Community Effectively Uses a World-Class Data System to Improve Student Outcomes

5



EVERY School and District is Rated "C" or Higher

6



VISION

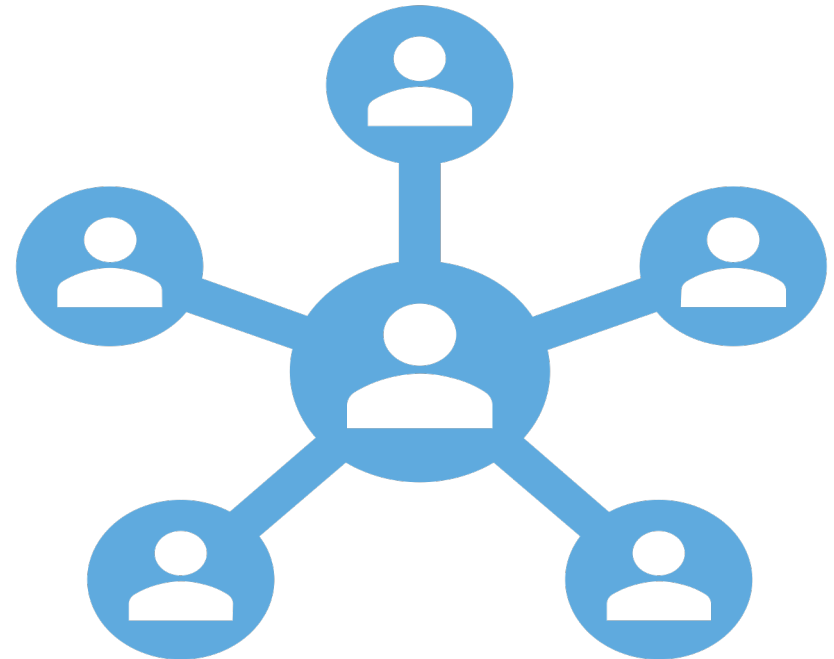
To create a world-class educational system that gives students the knowledge and skills to be successful in college and the workforce, and to flourish as parents and citizens



MISSION

To provide leadership through the development of policy and accountability systems so that all students are prepared to compete in the global community

- Silence your cell phones
- Please check and/or reply to emails during the scheduled breaks
- Be an active participant
- Do not hesitate to ask questions





Define orthographic mapping and examine the research.



Explore the relationship between unitization, sight words, and fluency.



Learn ways to teach orthographic mapping.



Discuss orthographic mapping activities in the classroom.



Discuss with a shoulder partner what comes to mind when you hear "Orthographic Mapping." Be prepared to share.



Phonological & Orthographic Processors



The Brain:



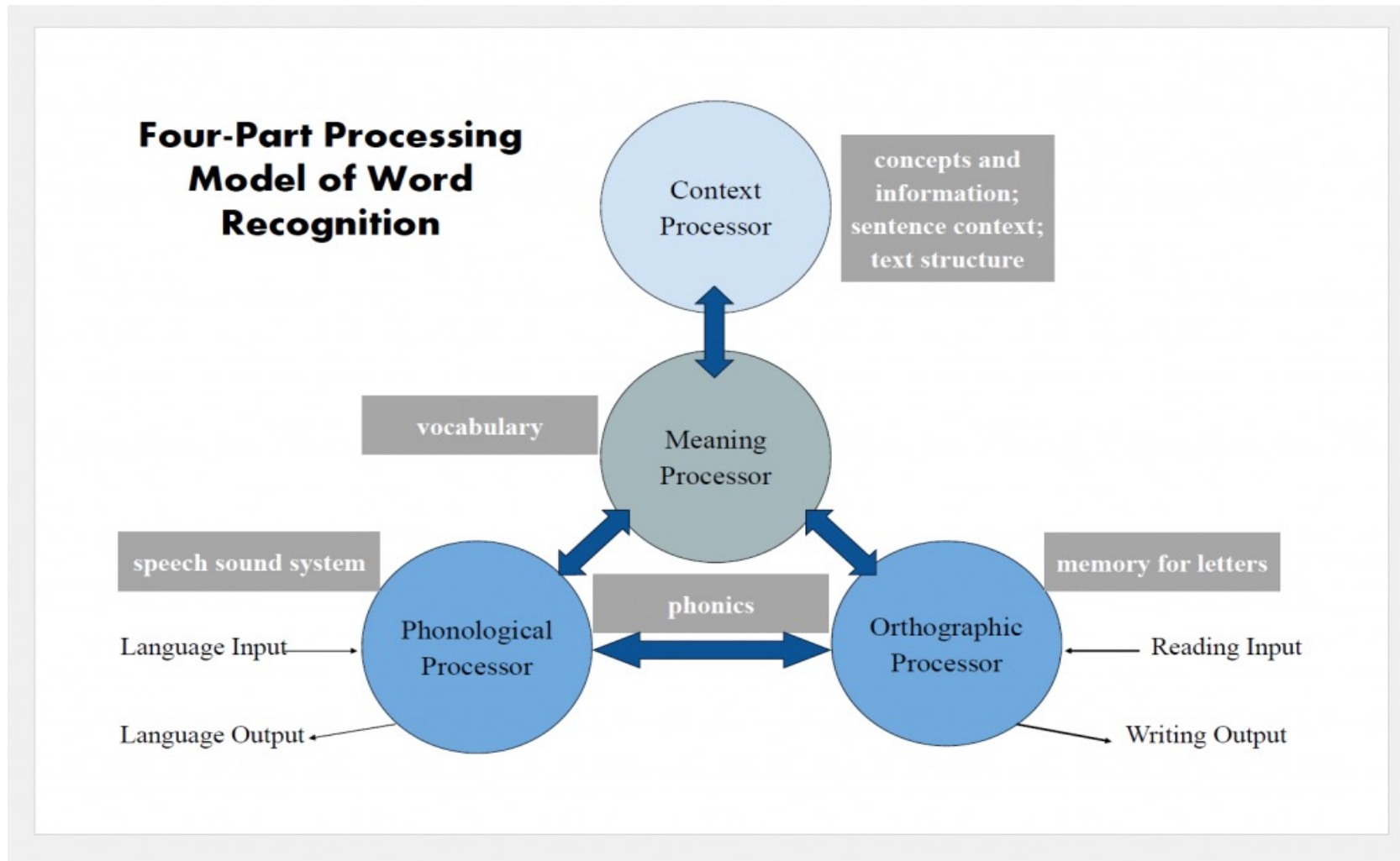
Reads by breaking words into sounds.



Is naturally wired for speech, but not for reading.



Relies on other systems already in place, mostly in the brain's language center, to work together to read.



(Seidenberg & McClelland, 1989)

The **phonological** and **orthographic processors** work together for **word recognition**.

Orthographic Processor

- Identifies and processes the letters and letter patterns that our eyes see on the page.
- Helps us remember letter sequences for spelling.

Phonological Processor

- Identifies, remembers, interprets, and produces speech sounds.
- Phoneme awareness is just one of the jobs of the phonological processor.



- Automatic word recognition (identifying a word “on sight”) happens after the word is read and mapped over and over, and neural connections have gotten stronger and stronger.
- For some children, this happens quickly after only a few repetitions. With other children, it takes seemingly endless (possibly hundreds of) exposures.

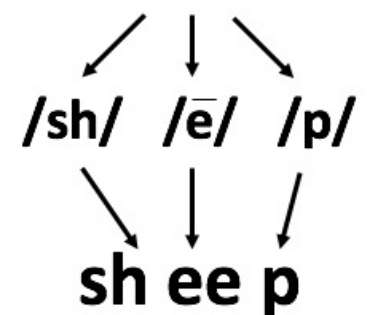
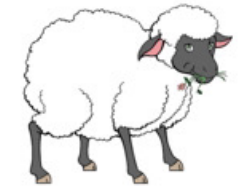
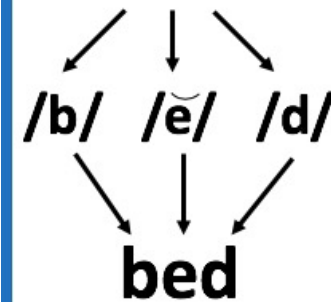


(Paul, 2020)

- After students have mastered many words (meaning they have stored those letter patterns in their own mental lexicon), then they can begin to read using these familiar patterns.
- They may be quicker to read “p-an” and “m-an” because they have read “can” so many times and have “mapped” the letters a-n to the pronunciation “an.”



Defining Orthographic Mapping and How it Works



- According to David Kilpatrick (2021), good readers can access around 50,000 words on sight without any conscious effort.
- No one consciously memorizes that many “sight” words, so cognitive processes must be occurring “behind the scenes” making it possible to instantly access that many words.
- Orthographic mapping describes the “behind the scenes” processes of mapping sounds to letters resulting in automatic retrieval.
- Orthographic mapping is enabled by *phonemic awareness and grapheme-phoneme (letter-sound) knowledge*. (Ehri, 2014)
- Orthographic mapping is the process by which we store written words in our long-term memory, for quick retrieval later.

Ortho= straight

(think of orthodontist)



Graph= writing

Meaning: **Correct Writing**

- **Orthography** refers to the conventions in a spoken language that are used to represent its words in writing.
- **Mapping** is connecting *sounds* in words to letters/spellings in *print*.



Two Levels of Word Reading



Phonemic Decoding

- Sounding out words
- Letter-sound knowledge
- Phonemic knowledge/blending

Orthographic Mapping

- Remembering words
- Letter-sound proficiency
- Phonemic analysis proficiency

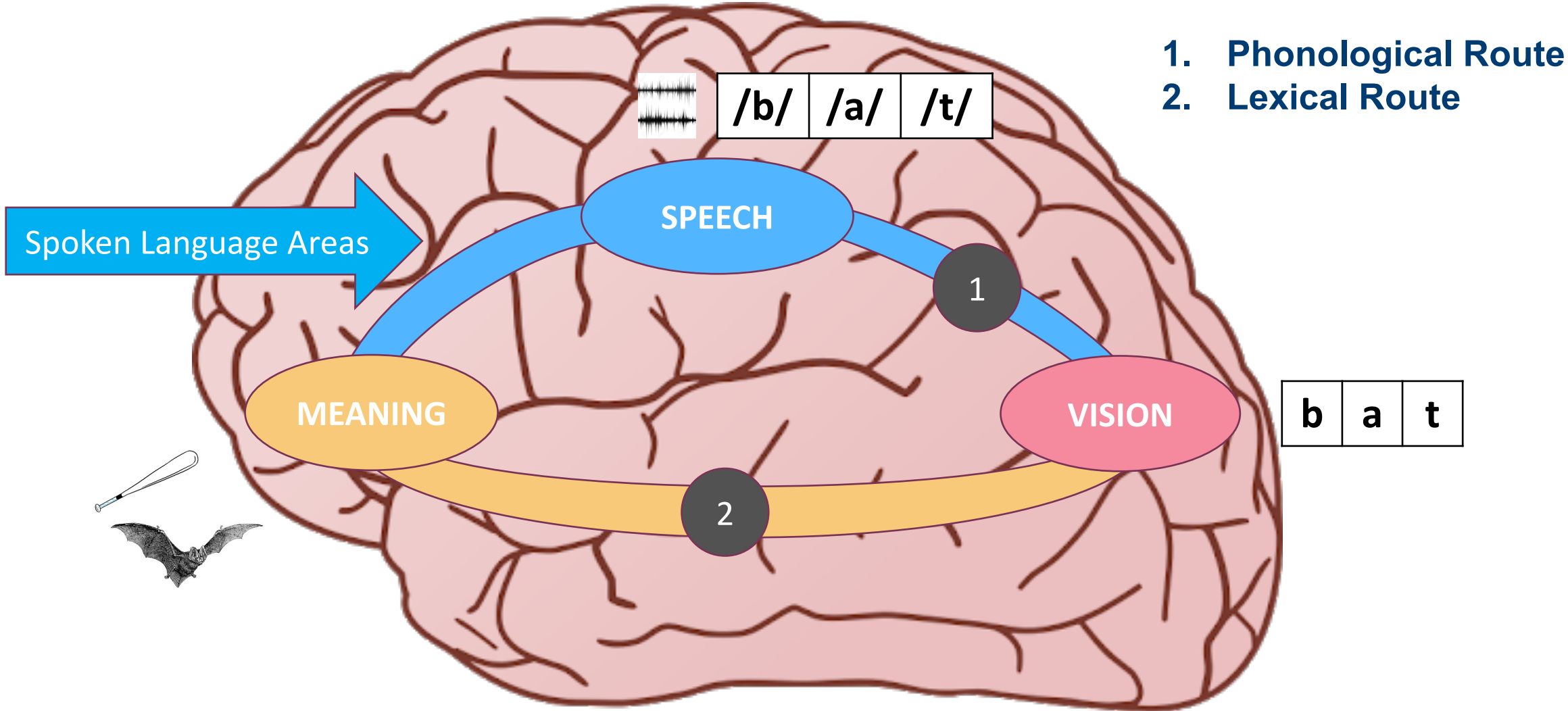


Orthographic Mapping is the mental process we use to store words for immediate, effortless retrieval. It requires **phoneme proficiency** and **letter-sound proficiency**, as well as the ability to unconsciously or consciously make connections between the oral sound in spoken words and the letters in written words.

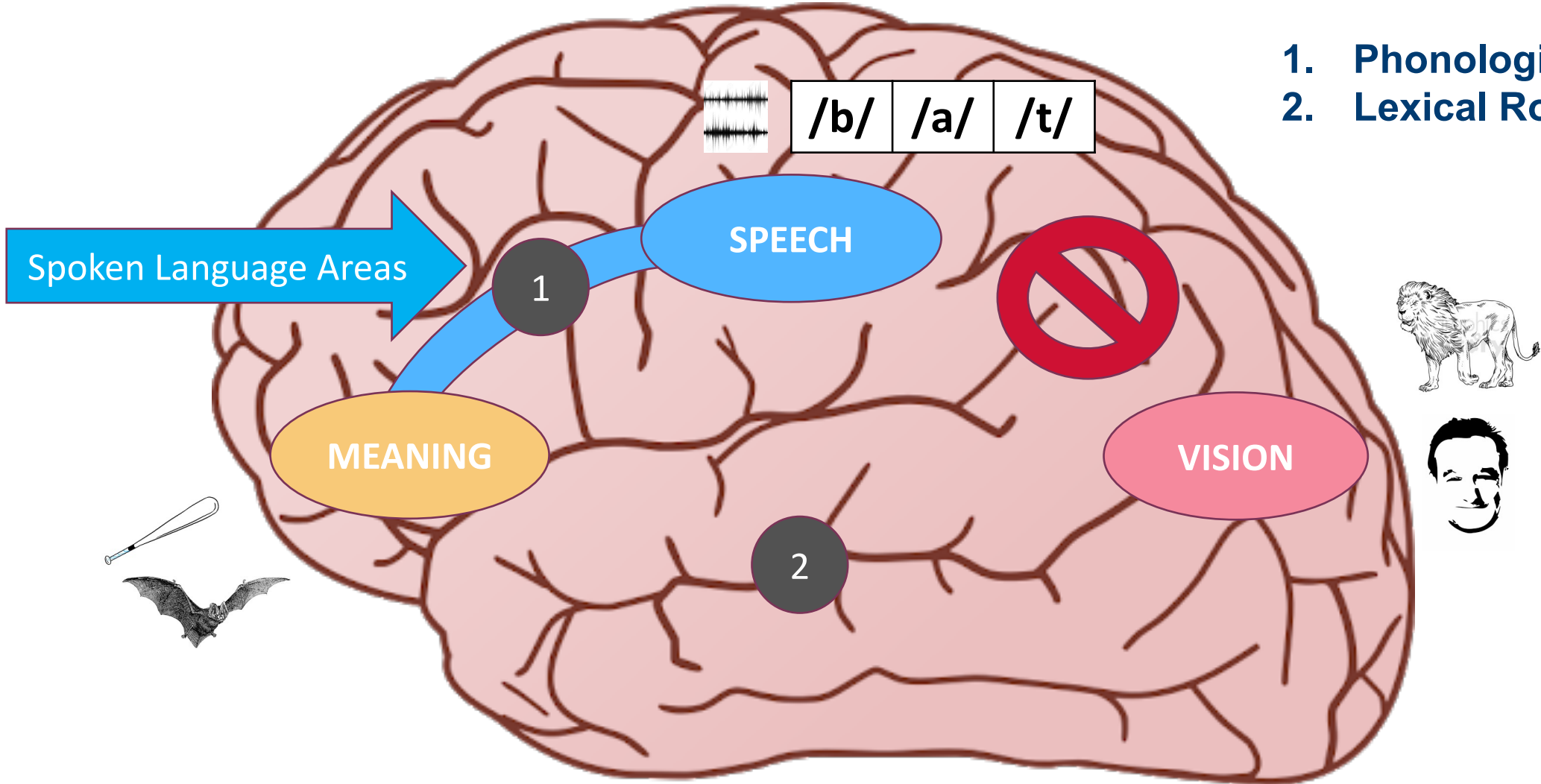
(Kilpatrick, 2016)

Orthographic mapping is the process by which children move from **decoding** **alphabetically** to reading via the **fluent recognition** of individual words.

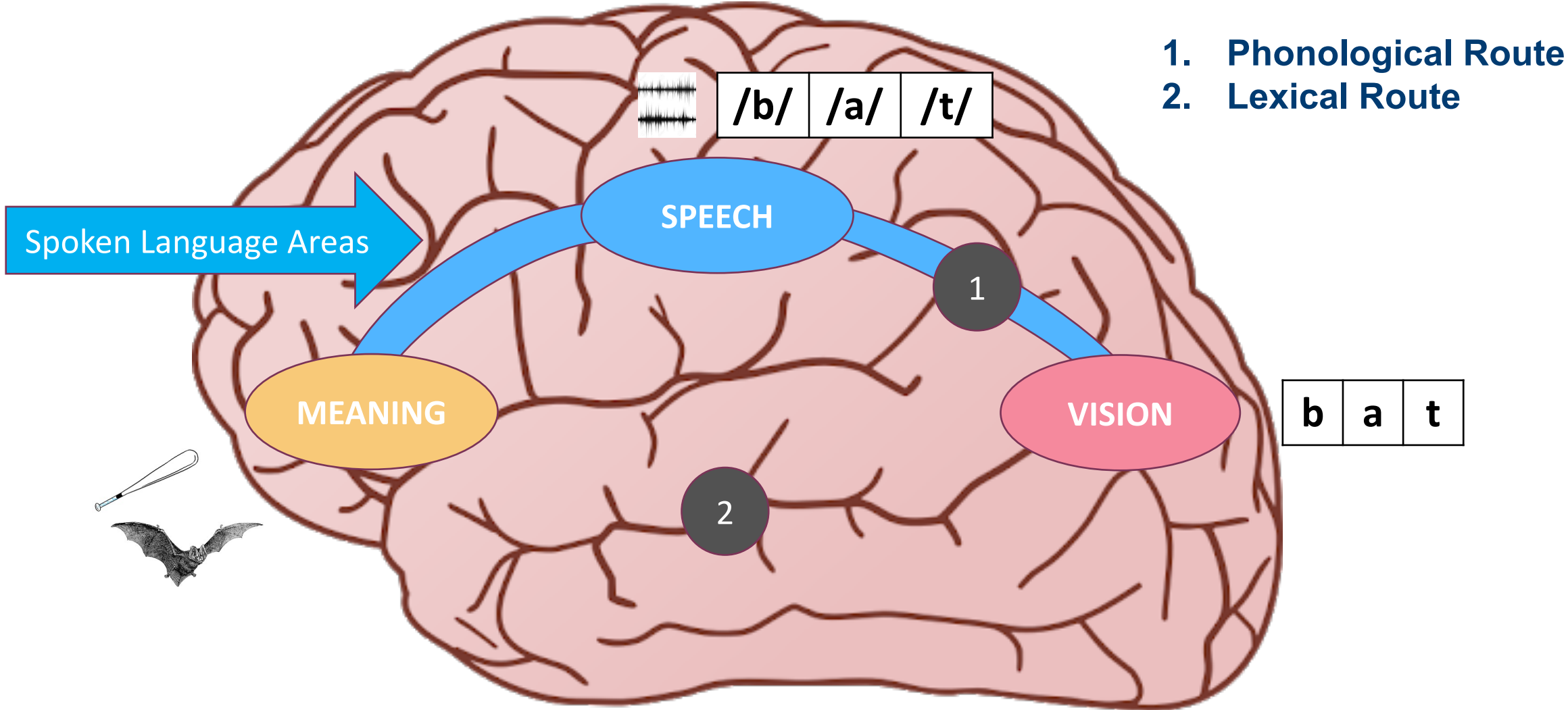
(Castles, Nation 2006)

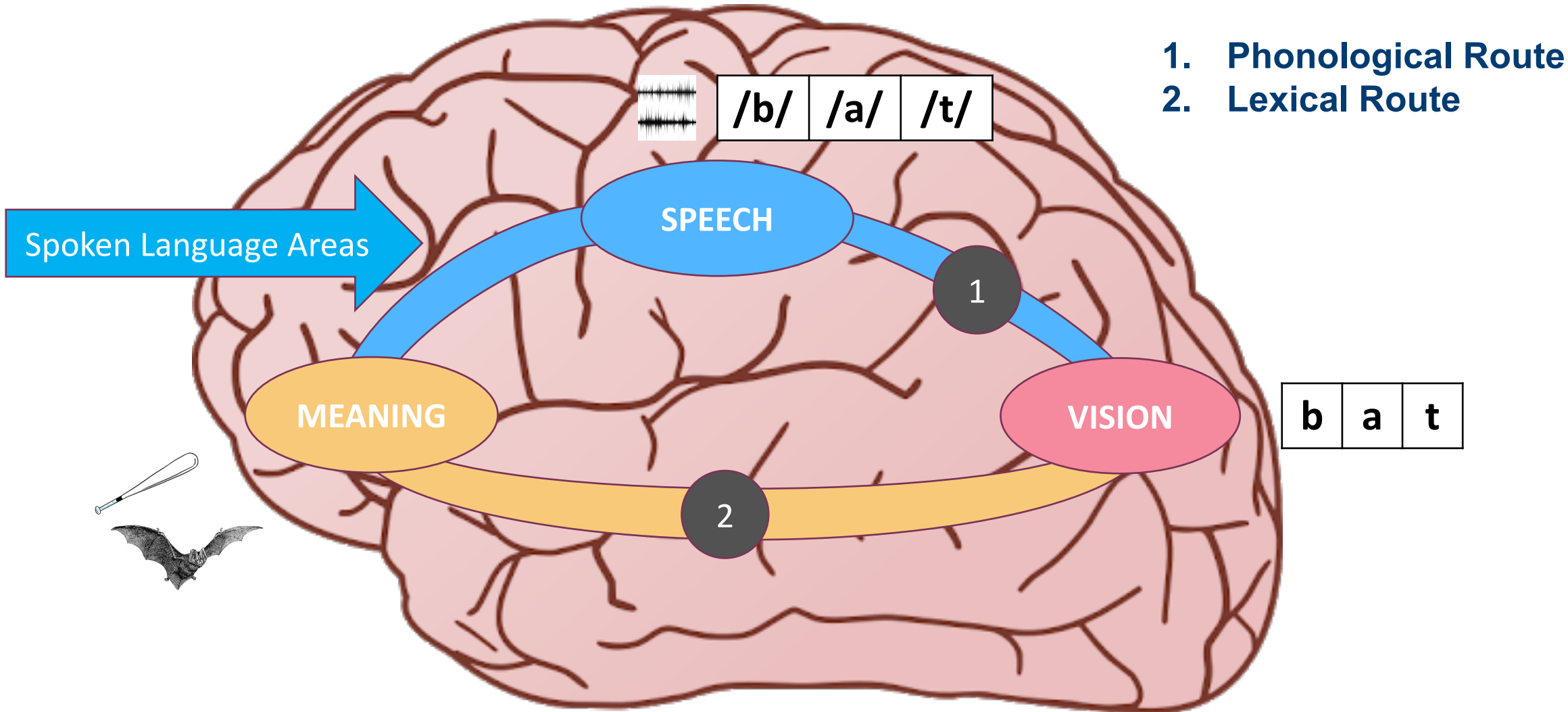


- 1. Phonological Route
- 2. Lexical Route



- 1. Phonological Route
- 2. Lexical Route



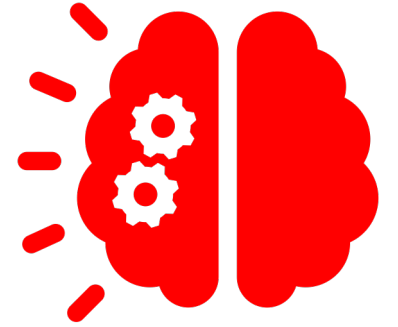


- 1. Phonological Route
- 2. Lexical Route

- “Typically developing readers will naturally analyze any whole word phonemically and establish an orthographic representation of that word.” (Kilpatrick 2015)
- Some students will require guided practice with advanced phonemic analysis.
- **Weak readers** do *not* naturally engage in orthographic mapping because **they lack those advanced phonemic awareness skills.**





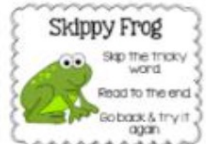
Develop Automatic Processes

- Train letter-sound skills to proficiency/automaticity
- Train phonemic access skills to proficiency/automaticity



If phonemic skills do not fully develop, word reading is compromised. They are the foundation for letter sound knowledge and letter sound proficiency.

(Kilpatrick, 2021)

What We Teach:	What Our Students Do:	What They Learn:
	<p><i>Look at the pictures.</i></p>	<p>I don't need the words to read.</p>
	<p>I see the shark. <i>"I see the s/h/ă/r...?"</i> <i>Look at the pictures.</i></p>	<p>I don't need the words to read. Pictures are more useful than letter sounds.</p>
	<p>The gopher hops up. <i>"The g/öp/h/...?"</i> <i>Look at the pictures.</i></p>	<p>I look for chunks but sometimes they don't work. Pictures are more useful than words.</p>
	<p>I see the shark. <i>"I see the s/h/ă/r/k... s/h/ā/r/k?"</i> <i>Look at the pictures.</i></p>	<p>Letter sounds (especially vowels!) are not reliable. I can count on the pictures.</p>
	<p><i>Skip the words and look at the pictures.</i></p>	<p>Reading is easy, especially if I ignore the words!</p>

(Right to Read Project, 2019)

Unitization, “Sight Words,” and Fluency



“If a child memorizes ten words, the child can read only ten words, but if a child learns the sounds of ten letters, the child will be able to read 350 three sound words, 4,320 four sound words and 21,650 five sound words.”

Dr. Martin Kozloff (2002)



UNITIZATION occurs when our brains form connections between the pronounced phonemes in a word and the order of graphemes or printed letters in the word.

The brain maps the **SOUNDS** of a word to the visual **SEQUENCE** of letters on the page, and those letters become **UNITIZED** – known as a unit.

/alk/ walk
 talk
 balk

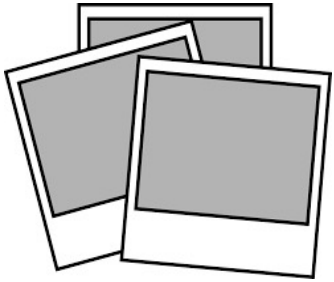
How do you pronounce this nonsense word?

nalk

Did your pronunciation rhyme with the word chalk or talc?



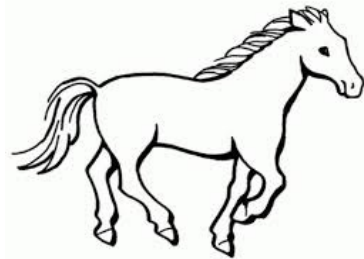
Unitization, “Sight Words,” and Fluency 29



UNITIZATION is the *rocket fuel* that propels sight word development.

Photograph – Phonograph

House – Horse



The Brain:

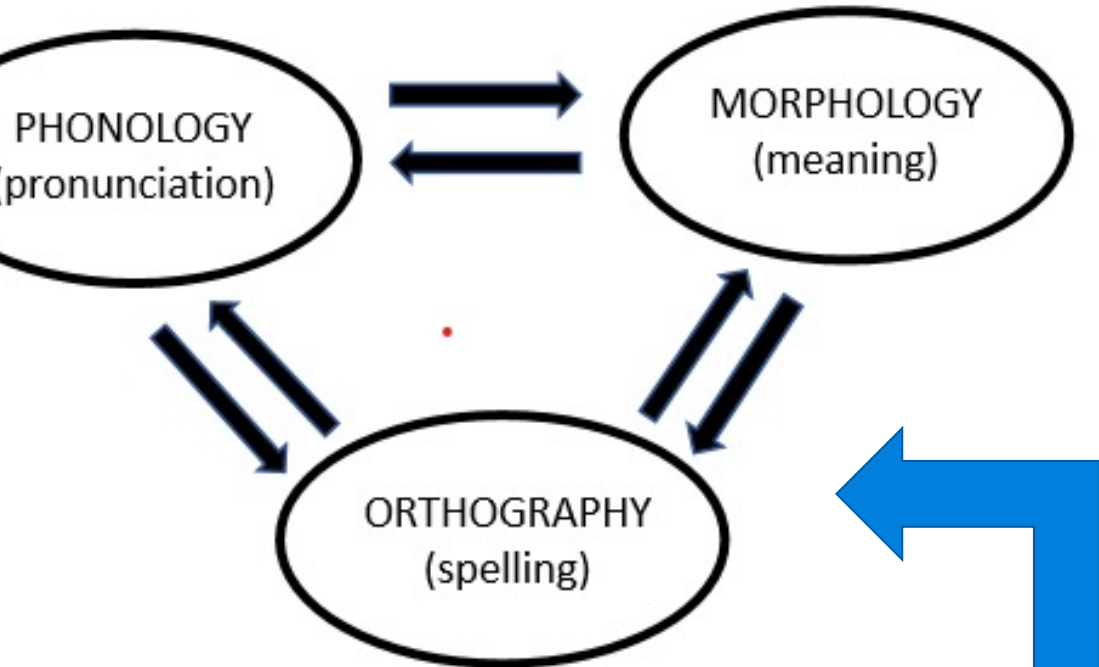
- Permanently identifies each letter in the word.
- Recognizes the units automatically.

Unitization, “Sight Words,” and Fluency 30

“SIGHT WORDS” = Words that our brain have mapped and can be retrieved instantaneously

Once a sight word is learned, it is impossible for your brain to suppress it.

Pronunciation and meaning are activated instantaneously.



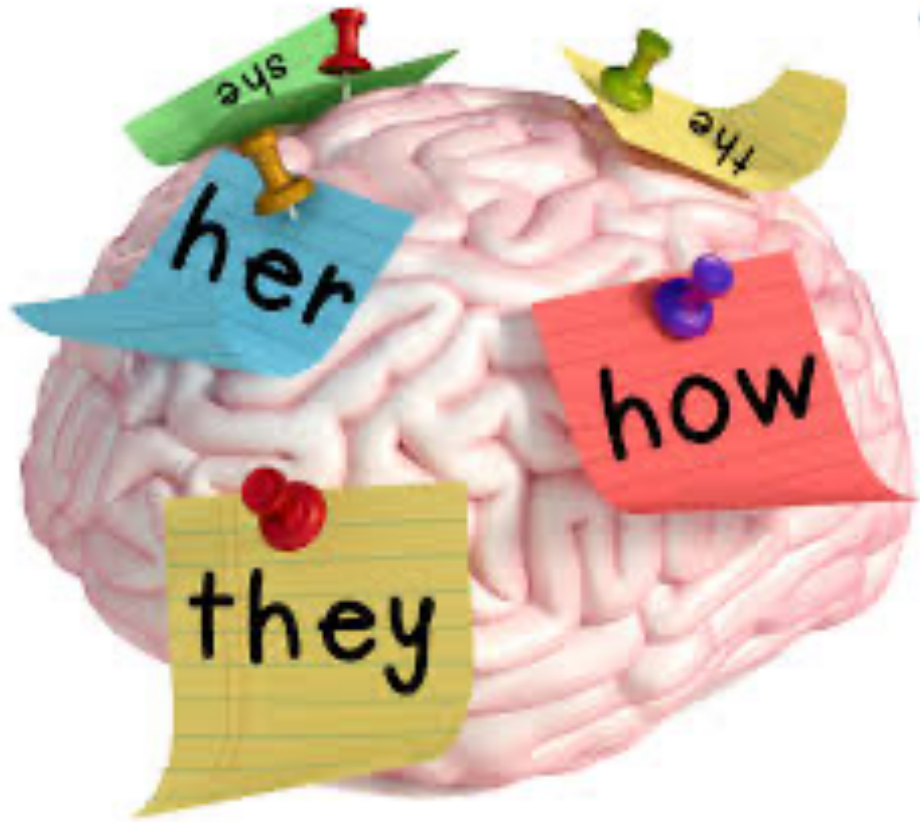
All work together to allow immediate access to words.

How Words Become “Sight Words” 31



- The orthographic lexicon will develop as a child learns to read. Students will learn the exact *letter sequence* of words, which will then be recognized "by sight" without needing to be sounded out.
- Letter-sound skills and phonemic analysis skills will help students map the sequence of letters onto the pronunciation of words.
- The spelling of c-a-t becomes linked to the pronunciation and meaning that is already stored in that child's brain for years.

(The Reading League, 2017)



- When students are first learning to read, they are attempting to decode most words sound by sound.
- As they read more, they start to recognize words “**on sight**” without having to decode.
- They need to store these letter sequences correctly (for word recognition) through orthographic mapping.

(The Reading League, 2017)

The Stroop Effect

Directions: On the next slide, name the color of each word you see. **Do not read the words!** You will have thirty seconds to name all the colors.



The Stroop Effect- ACTIVITY

RED	BLUE	GREEN	YELLOW	ORANGE
PURPLE	ORANGE	RED	GREEN	BLACK
BLACK	YELLOW	BLUE	RED	PURPLE
ORANGE	RED	GREEN	PURPLE	YELLOW
BLUE	RED	YELLOW	ORANGE	BLACK

The Stroop Effect

Selective Attention Theory:

- The brain uses more attention to recognize a color than to read a word.
- Naming the actual color takes longer than reading the text.

Speed of Processing Theory:

- The brain reads words faster than it recognizes the colors.
- The speed at which we read makes it much more difficult to name the color without a lag.



The Stroop Effect

Automaticity:

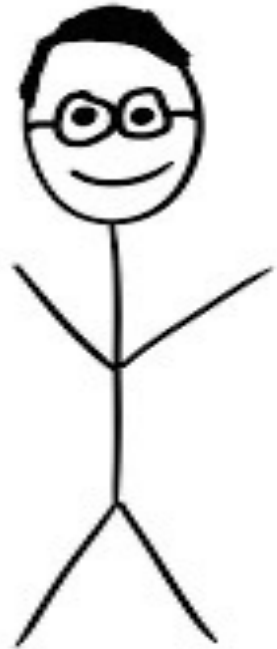
- The brain automatically understands the meaning of words through a long-time habit of reading, but recognizing colors is not an automatic process.
- The brain must override its initial impulse of automatically reading the word in order to recognize the color.



The Stroop Effect

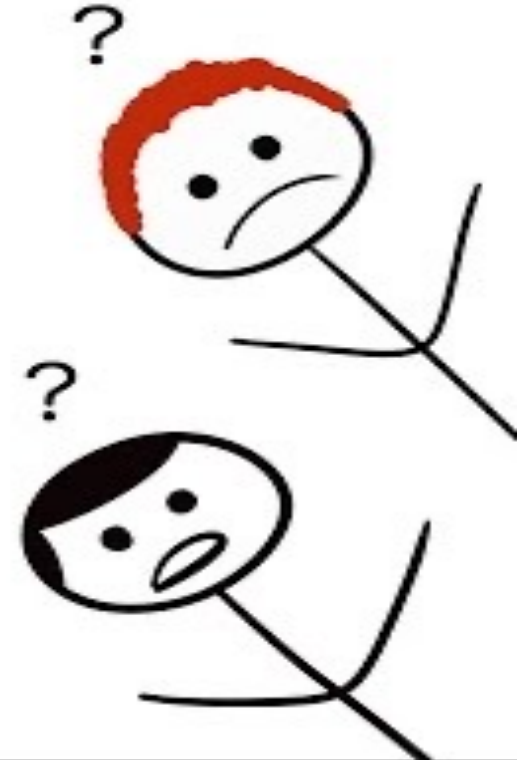
- We will view “The Stroop Effect” video.
- While we view the video, please jot down items that stand out to you and how this relates to orthographic mapping.





Red

Purple



The Beauty of “Sight Words” and Unitization

Automatic and accurate recognition of words eases the burden of reading, makes it more enjoyable, and frees up cognitive resources to think and learn.

- The key to building fluency is orthographic mapping.
- Establishing “sight words” leads to **fluency**.



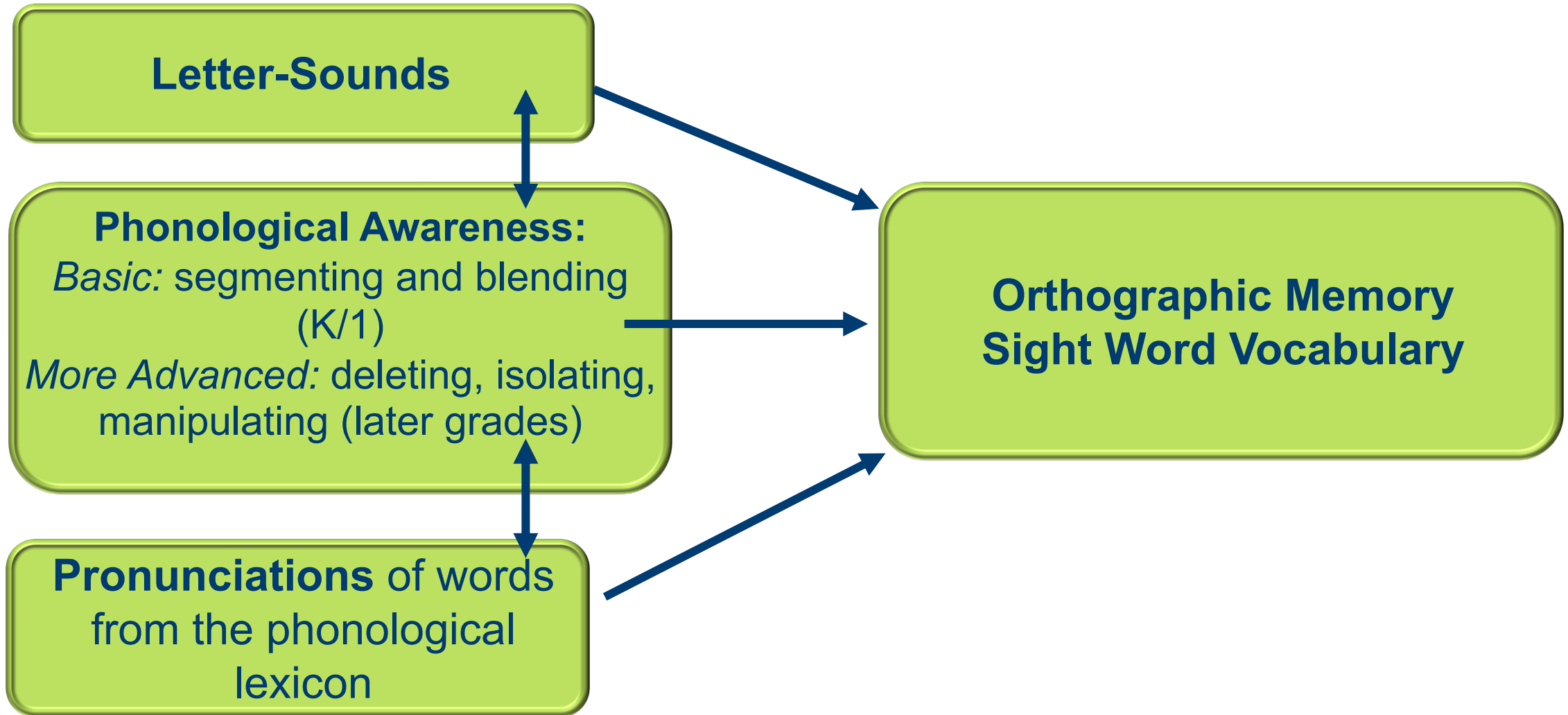
The Beauty of Sight Words and Unitization

per	sim	mon
super	simple	money
perhaps	simile	harmony
supper	assimilate	monkey
person	simper	summon

persimmon

Prerequisite Skills & Activities for Orthographic Mapping



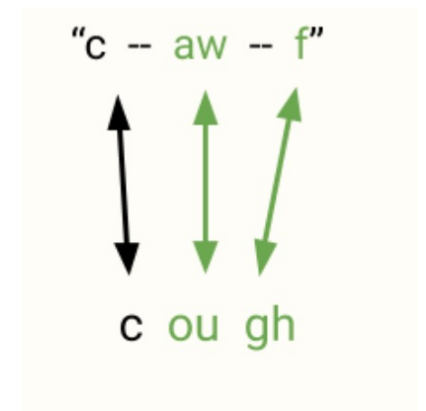
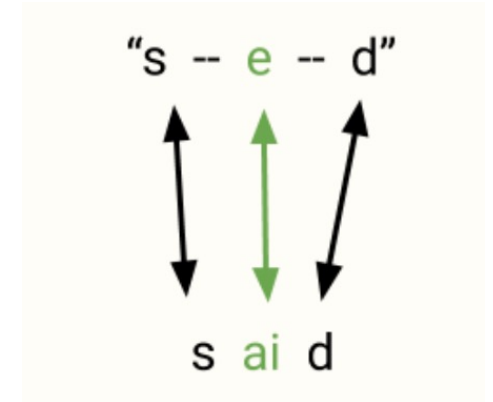


Word-Reading Development

Grade	Phonological Skill	Word-Reading
Pre-K - K	Early phonological awareness: rhyming, alliteration, first sounds	Letters and sounds: requires simple phonics to learn sounds that correspond to letters
K - 1 st	Basic phonemic awareness: blending, segmenting	Decoding: requires letter sound knowledge and blending; a gateway to orthographic mapping
2 nd & 3 rd +	Advanced phonemic awareness: phonemic proficiency including phoneme manipulation	Orthographic mapping: requires letter sound skills and advanced phonemic awareness

(Joan Sedita, 2020)

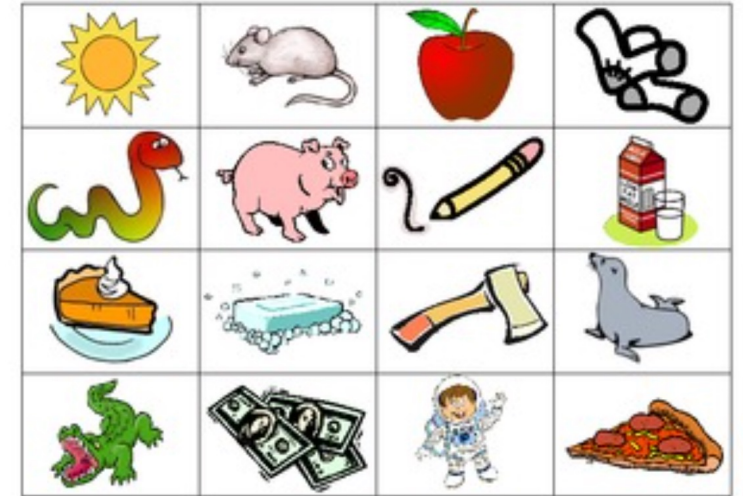
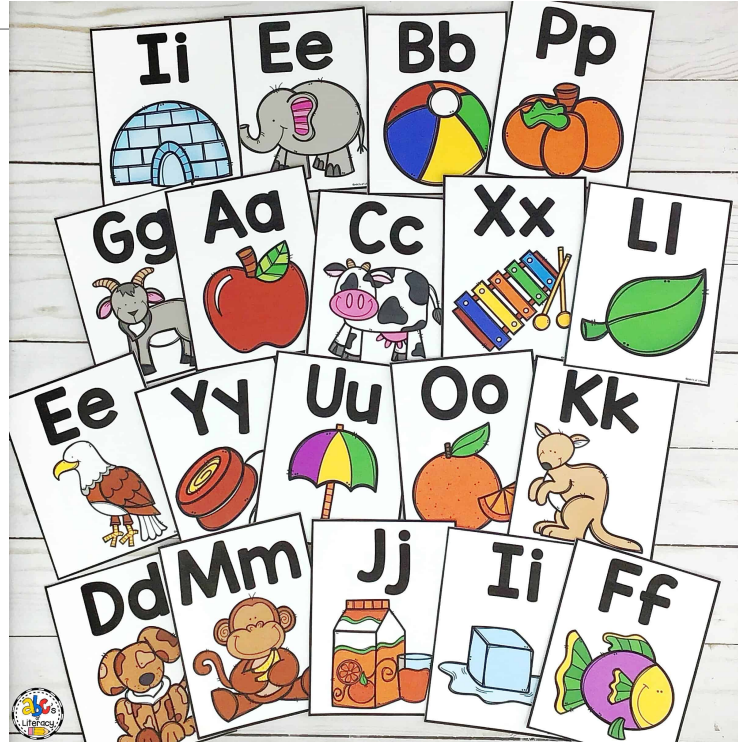
- Beginning readers in kindergarten and 1st grade are developing their knowledge of letter-sound correspondences and basic phonemic awareness skills and are beginning to decode.
- Before a student can orthographically map a word, the word first must be identified. Young students identify the pronunciation of a word by using their letter-sound knowledge to determine each sound in the word, and then using their phonemic blending skills to blend those sounds to decode (sound out) the word.
- Typically, by grade 3, orthographic mapping usually develops for most students simply by interacting with letters and words.





Peter Piper

Peter Piper picked a peck of pickled peppers. A peck of pickled peppers Peter Piper picked. If Peter Piper picked a peck of pickled peppers, where are the pickled peppers Peter Piper picked?



Orthographic Mapping Activity (Pre- K, K Phonological Skills)

Sound-Symbol Awareness is explicitly teaching and reviewing graphemes (letter name, letter sound, letter formation).



Sample Kindergarten Phonemic Awareness Activity:

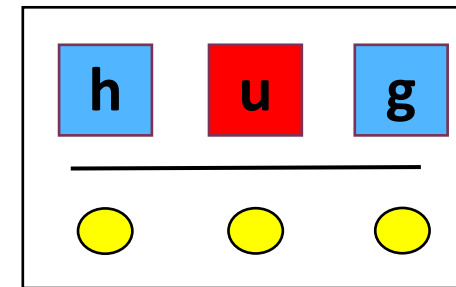
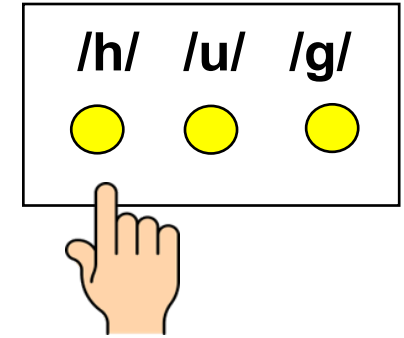
- Teacher- “Segment the word *map*.”
- Students- Push the chips as they say /m/ /a/ /p/.
- Teacher- “Take away the /m/. What do you have now?”
- Students- “/ap/”
- Teacher- Give students new bingo chip and say, “This is /s/.” I would place it where the /m/ was and ask, “now what is the word?”
- Students- “/sap/”



Orthographic Mapping Activity (K-1 Word Reading)

1. Say the word. Student repeats the word.
2. Finger spell to count the phonemes. To finger spell, use one finger per phoneme like you are counting.
3. Repeat by tapping on or moving something concrete, like these chips.
4. Build the word with letter tiles. Repeat the word matching the sound dots to the letters.
5. Ask questions that point out the sequence of letters. (*Which letter says /g/? Where is that letter in the word?*)

/h/ /u/ /g/



Sample 3rd Grade Phonemic Awareness Activities

Deleting: Say 'stow' without /t/. (sow)

Substituting: Say 'stow'. Now say 'stow' and change the /t/ to //.
(slow)

Reversing: Say 'chap'. Now say the sounds in 'chap' in reverse.
What do you get? (patch)

These tasks are more highly correlated with word-reading than simple segmentation.

- For struggling readers in 2nd and 3rd grades who do not naturally develop advanced phonemic awareness skills through exposure to classroom literacy activities, orthographic mapping is difficult.
- Research suggests that advanced phonemic awareness skills and phonics should be directly taught for these students to become proficient readers.
- Interventions that allow students to complete their phonological awareness development (along with teaching and reinforcing phonics skills and phonic decoding and providing opportunities for reading connected text) produce very large gains in word-level reading skills.

- Phonics and phonemic awareness instruction must be explicit and systematic.
- Lessons should provide adequate practice and immediate feedback.
- Instruction should provide many practice opportunities.
- Distributed learning is better than massed learning.
- Language of instruction must be mastered.
- Motivation is important – Activities should be fast-paced, fun, and brief.

(Kilpatrick, 2021)



Directions: At each table there is a folder. One side is labeled "Myth" and the other is labeled "Fact". Read each statement on the cards that have been provided and decide whether it is a myth about reading or a fact about reading.

	Myth	Fact
1.	If children love reading, they will learn to read.	If children learn to read, they may come to love it.
2.	Reading is primarily a visual act.	Eyes are dumb. The brain controls the eyes. Nothing you do to the eyes will change the reading brain.
3.	Problems with eye movements can cause reading disabilities.	Atypical eye movements are the result of reading difficulties, not the cause.
4.	Memorizing words on flashcards builds long-term reading skills.	Memorizing a few common, odd words in K may help with initial text reading. Long-term reading skills require automatic letter-sound correspondences and accurate decoding. When children decode accurately, they store specific, exact word memories needed for instant word reading. Accurate decoding builds long-term reading skills by reinforcing word memories during independent reading.
5.	Decoding is mainly important in reading before 4 th grade.	Accurate and automatic decoding also is necessary beyond 4 th grade to read unfamiliar words that are key to comprehending new information.
6.	The visual word form area is the word center of the brain.	The visual word form area is one of two areas active in silent word reading. It works in cooperation with the speech sound area of the brain. Skilled readers automatically process letters and sounds when reading silently.

(Jane Ashby, 2021)

- Orthographic mapping is the mental process by which readers store written words for immediate, effortless retrieval.
- Sight words are words that are stored through orthographic mapping and recognized instantly without decoding. Sight words are NOT words that are typically memorized because of irregular spelling patterns.
- Letter sounds proficiency, phonological proficiency, and pronunciations of words from the phonological lexicon are pre-requisites for orthographic memory and sight word vocabulary.
- Advanced phonemic awareness proficiency is needed for orthographic mapping (deleting, substituting, reversing) and can be completed during whole group and small group instruction.

Q&A

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