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# Understanding the Science of Reading

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# Agenda

- History of Reading Instruction
- Scientific Studies of Reading
- The Science of Reading Instruction
- Questions

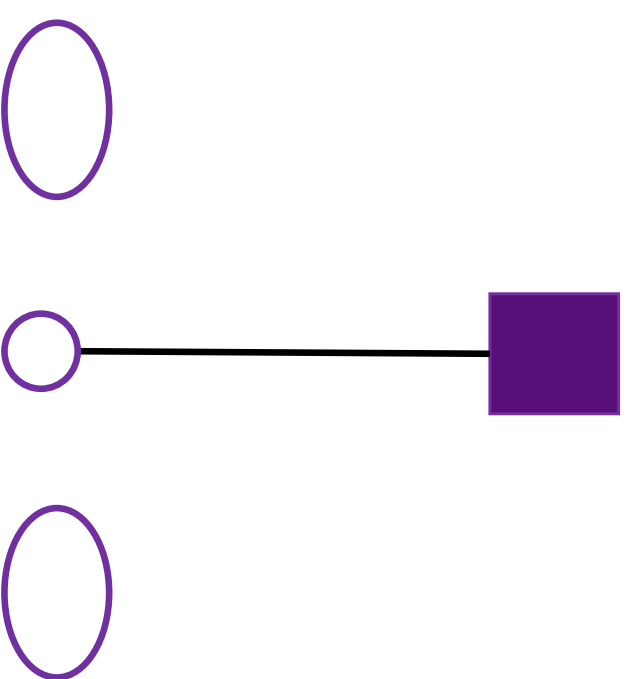


# History of Reading Instruction



# History of Reading Instruction

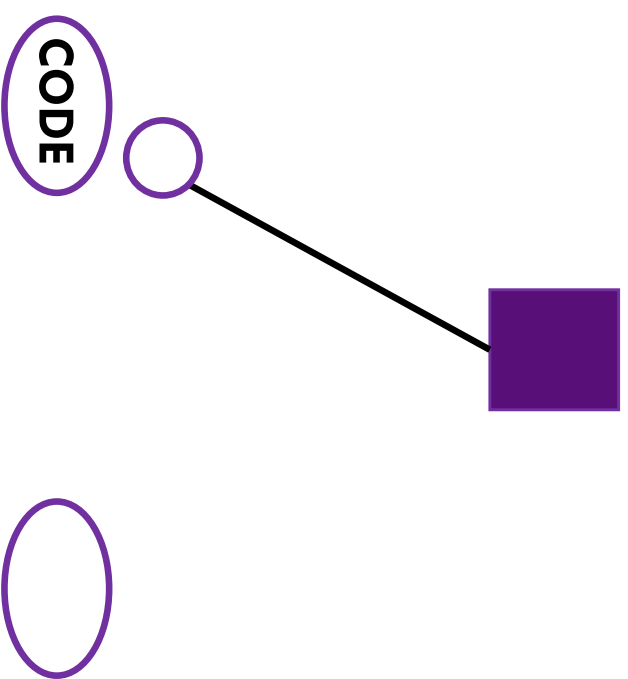
- Analogous to a pendulum
- Moves across a continuum
- Ends represent different viewpoints or philosophies





# Code-Related

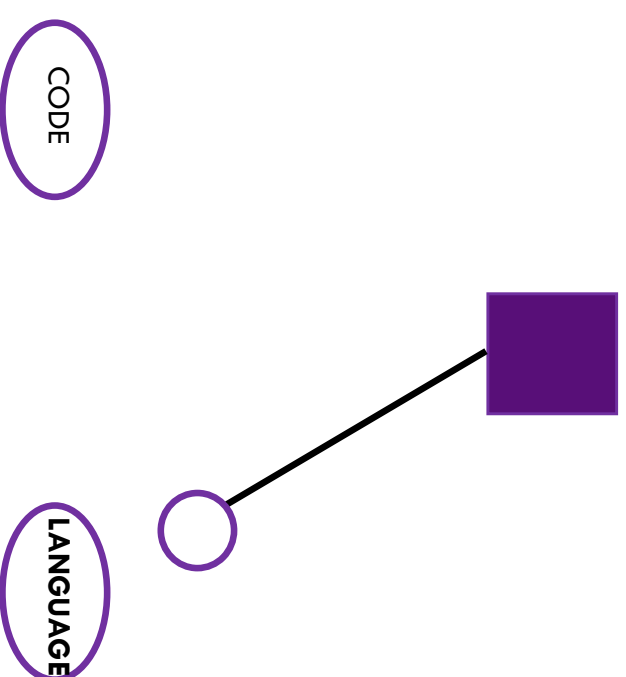
- Teach the alphabet and the sounds letters represent
- Use code-related skills to “sound out” unfamiliar words
- Associated with phonics instruction





# Language-Related

- Focus on meaning, emphasizes the use of authentic literature
- Words recognized holistically and by sight, largely based on language abilities of the learner
- Associated with Whole Language instruction



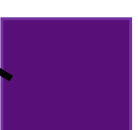


# Research Synthesis Reports

- National Reading Panel (2000)
  - “Big 5”
    - Phonemic awareness
    - Phonics
    - Fluency
    - Vocabulary
    - Reading comprehension
- National Early Literacy Panel (2008)

CODE

LANGUAGE



# Scientific Studies of Reading





# Simple View of Reading

- **Reading comprehension (R)** is the product of two, interdependent processes:
  - **Decoding (D)**: recognizing words quickly and correctly
  - **Language comprehension (L)**: understanding information presented through oral language
- Both are necessary, but neither alone is sufficient

$$R = D \times C$$



# Simple View of Reading

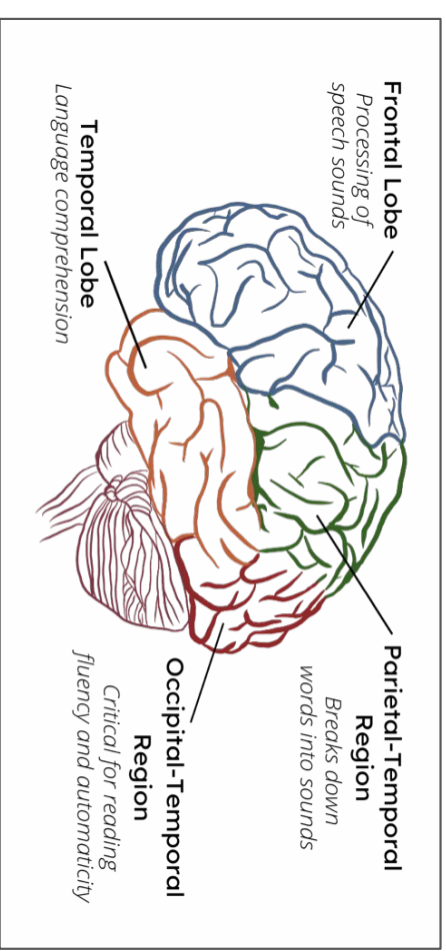
- Three types of reading disabilities:

		Decoding	
Language Comprehension		<b>Strong</b>	<b>Weak</b>
	<b>Strong</b>	Typical reader	Dyslexia
	<b>Weak</b>	Hyperlexia	Mixed type

# The Reading Brain



- Advances in medical technology offer new insights
- Studies of veterans with brain injuries
  - children identified as dyslexic
    - Brain image scans
    - Eye movement tracking
- Evidence that effective instruction changes the brain





# The Science of Reading

- Body of research from multiple fields of study using methods that confirm and disconfirm theories on how children best learn to read
- Emphasizes the National Reading Panel and emerging research
- Embraces a dynamic approach that is open to change based on evidence



(Petscher et al., 2020; Shanahan, 2020)

# The Science of Reading Instruction

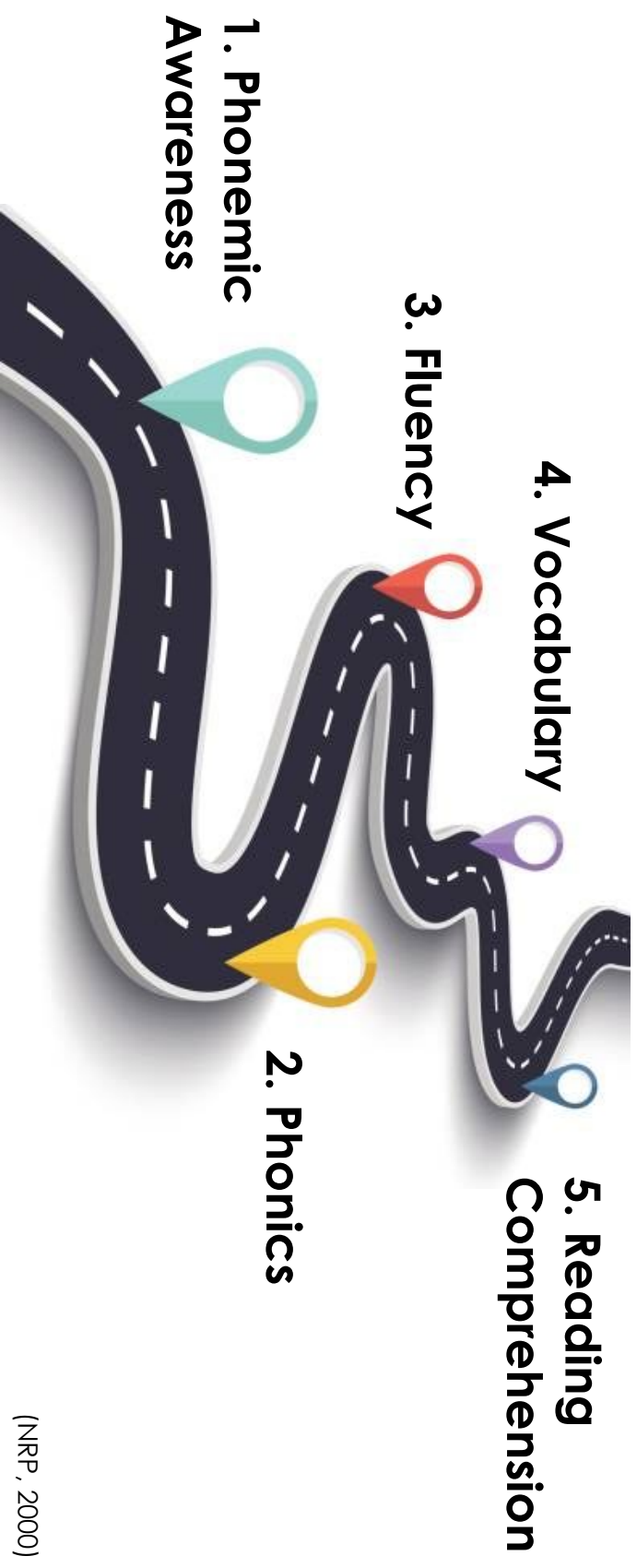


# Structured Literacy

- Grounded in reading research and cognitive science
- Explicit, sequential, and interactive instruction in...

**Decoding** + **Language Comprehension** = **Skilled Reading**

# Components of Structured Literacy



(NRP, 2000)



# Phonemic Awareness

“The ability to notice, think about, and work with the **individual sounds** in spoken words”



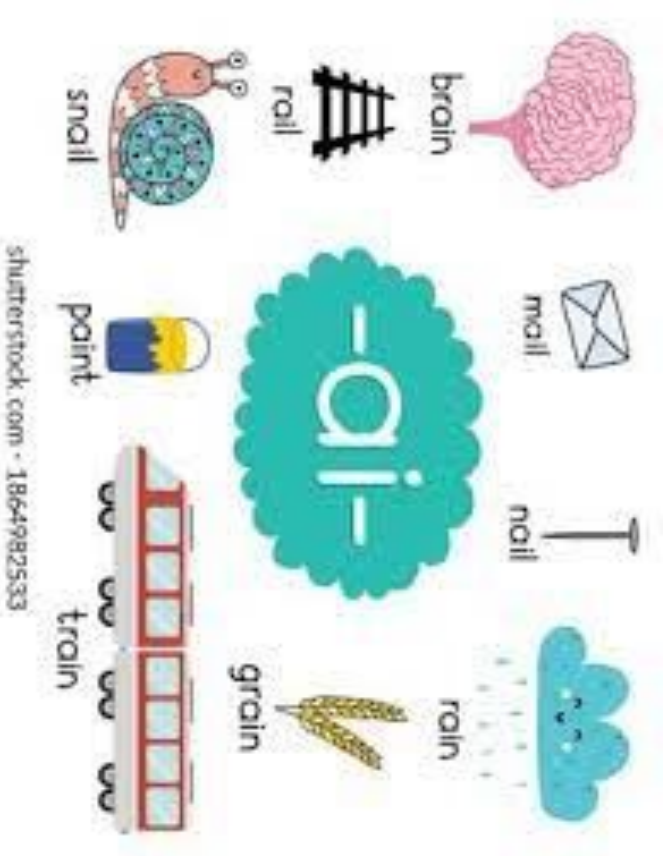
(Armbruster et al., 2009, p. 1)





# Phonics

- Use **systematic and predictable relationships** between written letters and spoken sounds to read and spell
- Instruction should be explicit and follow a logical sequence



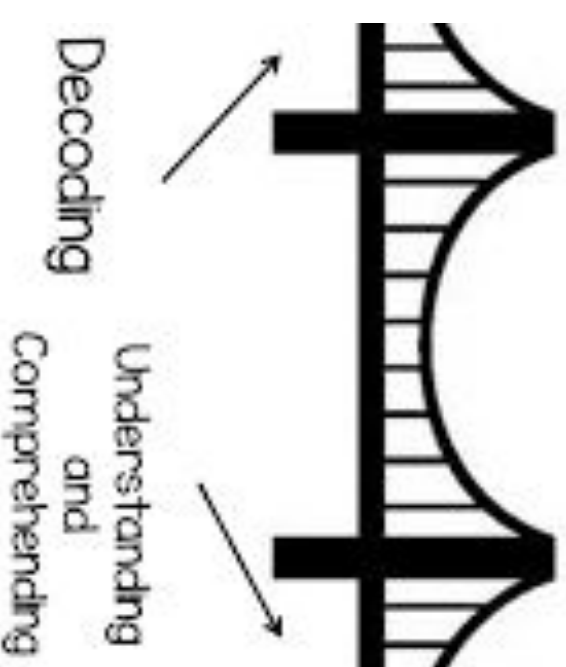


# Fluency

Ability to read text **accurately**,  
with appropriate **rate** and  
**expression**

Sign of proficient decoding

Necessary for comprehension







(Armbruster et al., 2009)



# Vocabulary

**Words** understood as we **listen, speak, read** and **write**

Supports learning to read and **reading comprehension**

Receptive Vocabulary	Expressive Vocabulary
listening 	speaking 
reading 	writing 

# Reading Comprehension



- The **goal** of reading
- **Purposeful** and **active** reading
- **Make meaning** from written text
- An outcome; not a single skill

(Armbruster et al., 2009)



Questions?