



# Dyslexia and the Construction of the Reading Brain

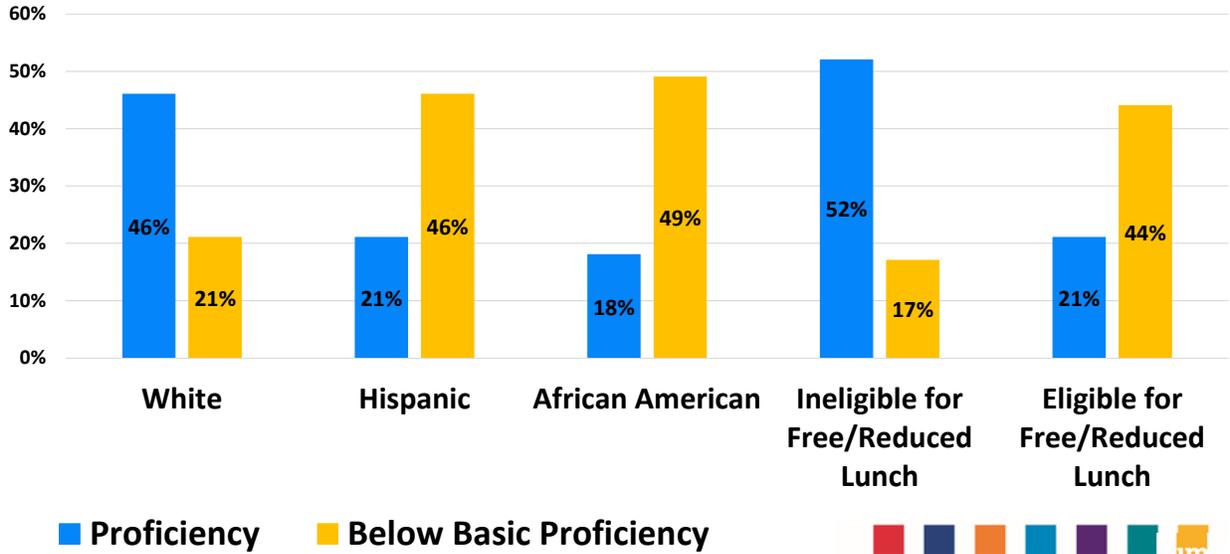
## The Illiteracy Epidemic



- Only 36% of U.S. children read proficiently by the end of third grade (NAEP 2015)
- “By 2020, all Georgia children will be on a path to reading proficiently by the end of third grade.” (Gov. Nathan and First Lady Sandra Deal, *Get Georgia Reading*)



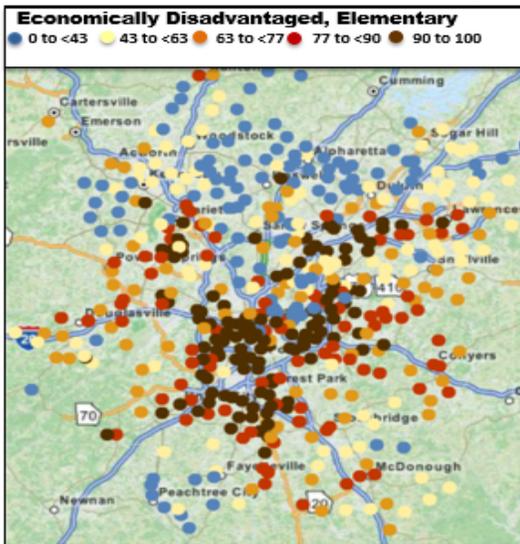
# Fourth Grade Reading Proficiency Levels (NAEP, 2015)



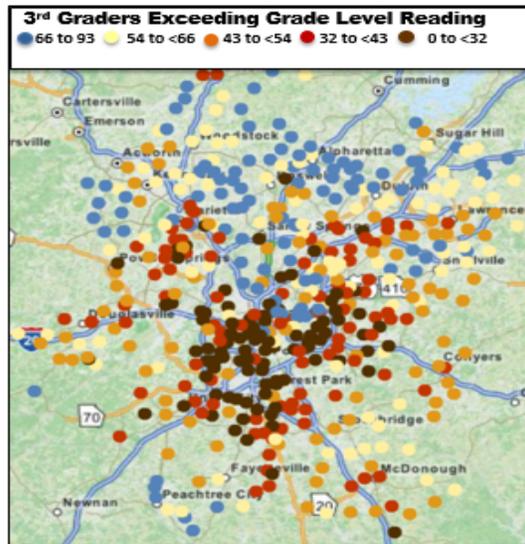
# A View of Atlanta



## Socioeconomic Map



## Literacy Map



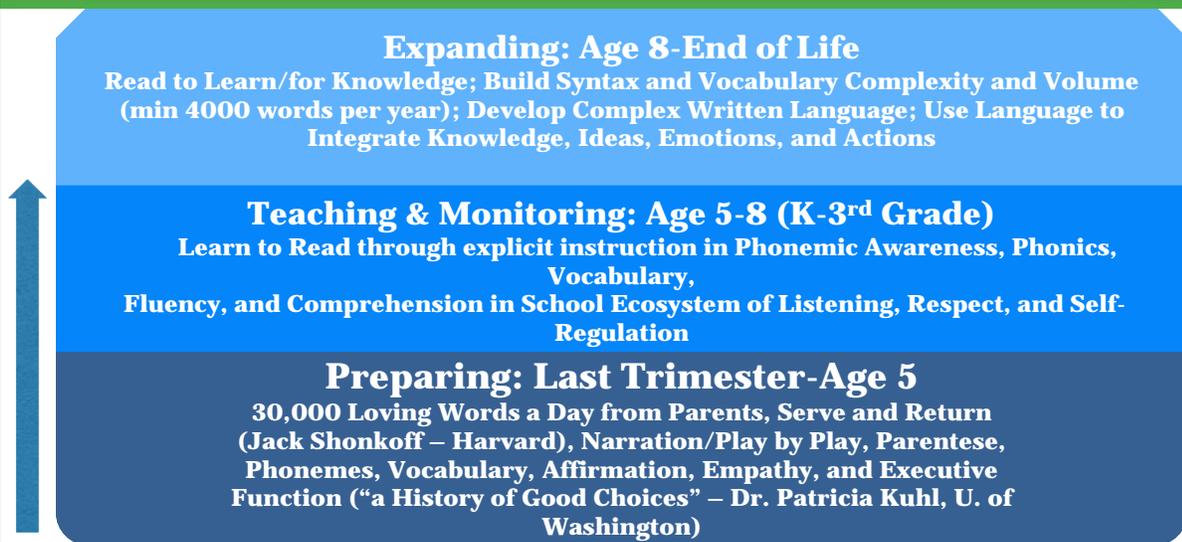
# The Atlanta Speech School



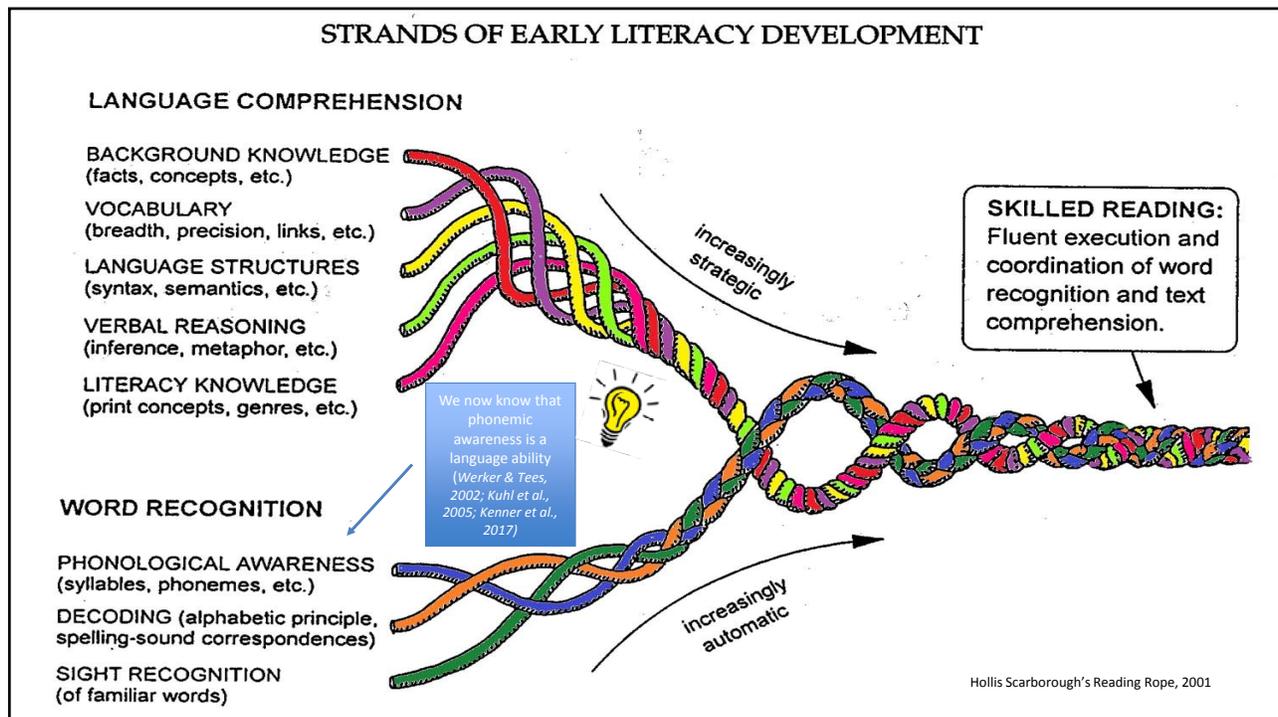
- 4 Schools
  - Hamm Center
  - Kenan Preschool
  - Stepping Stones
  - Wardlaw School
- 5 Clinics
- Rollins Center & Cox Campus
  - 21,000 educators reached
  - Approx. 230K students reached
  - Members in 48 states, 24 countries



# Construction of the Reading Brain



## STRANDS OF EARLY LITERACY DEVELOPMENT



## Warning Signs



- Word Retrieval weaknesses may be the first indication of a problem in very young children.
- Rapid naming of objects, colors, digits, or letters requires efficient retrieval of phonological information from memory – a critical skill for reading.
- Add to that a phonemic processing weakness in the form of articulation errors or mispronunciations and you have the warning signs of dyslexia.

Wagner, R., Torgesen, J., Rashotte, C. Comprehensive Test of Phonological Processing Examiner's Manual.



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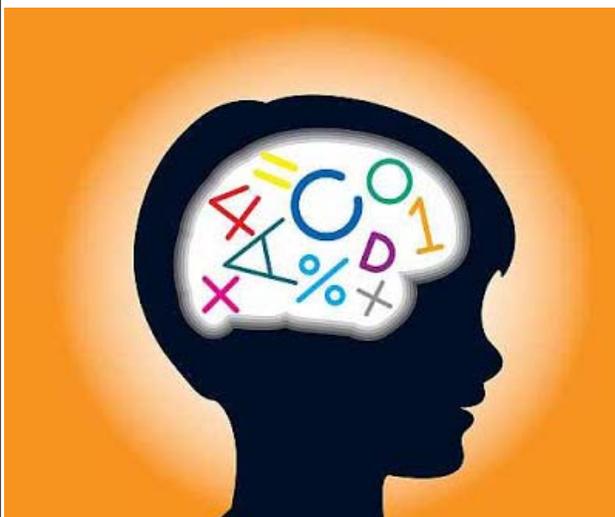
## Call 911 when:



- a child experiences word retrieval difficulties in on-demand language and grade-appropriate decoding is difficult. (RAN)
- phonemic awareness is weaker than expected, impacting articulation, pronunciation, listening or decoding at the word level.
- a child forgets the word he has decoded and must decode the same word each time it appears on the page. (Working Memory)
- fluency or automaticity with letter names, sounds, or words is not developing as it should.
- a child is an outlier in his/her reading group/class and available support isn't enough.
- retention is being contemplated because of reading performance.
- a child is reluctant to read.



## The Dyslexic Brain in the Classroom



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**Dyslexia** is a language-based learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities.

5–20% of the population have some of the symptoms of dyslexia, including slow or inaccurate reading, poor spelling, poor writing, or mixing up similar words.

Anatomical and brain imagery studies show differences in the way the brain of a person with dyslexia develops and functions.

If a child isn't learning to read and assessment isn't possible, assume the child has dyslexia and TEACH accordingly.



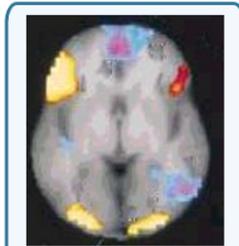
# A Portrait of Dyslexia



- Brain processes information less efficiently
  - Activation for reading is weaker or nonexistent in areas present in typical readers.



Ordinary readers use the left temporal area for sounding out words.



Poor readers do not use the left temporal area to find the sounds of words.



Capable dyslexic readers show greater reliance on right brain areas.



# Dyslexia

IS

IS NOT



- a language-based learning disability
- neurobiological in nature.
- associated with difficulty in processing the *orthography* (the written form) and *phonology* (the sounds) of language
- Impacted by weak rapid retrieval of letters, sounds, words, etc.
- hereditary
- is impacted by the child's ecosystem at home and at school.

- a reversal of letters
- a visual disability
- the result of low IQ
- seeing things backwards
- outgrown by third grade if given time
- responsive to whole-class instruction in reading
- improved by being read to
- a difficulty that benefits from memorization of whole words.



# Reconstruction of the Dyslexic Brain into a Reading Brain



## Expanding the Dyslexic Brain: Age 8-End of Life

With appropriate instruction and exposure to more sophisticated texts and information auditorially, children have great potential to read on or above grade level and achieve age-appropriate skill. Reading fluency may be delayed well beyond third grade and should be practiced with easier texts. Encoding may lag.

## Teaching & Monitoring the Dyslexic Brain: Age 5-8 (K-3<sup>rd</sup> Grade)

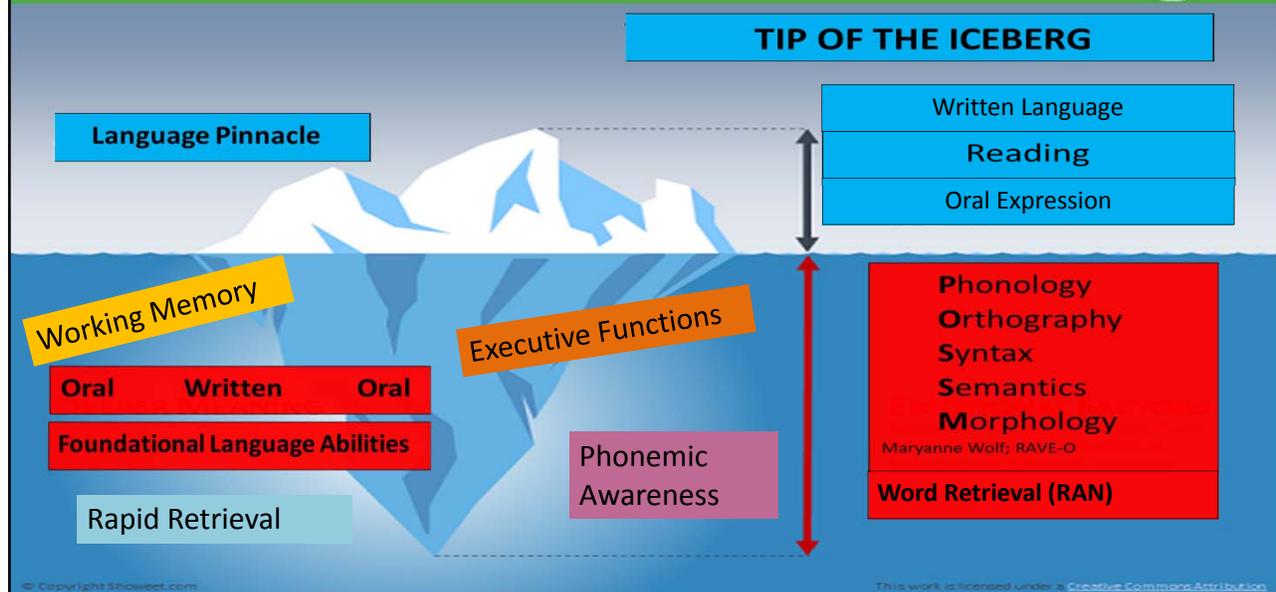
Learn to Read through explicit, systematic instruction in Phonemic Awareness, Phonics, Vocabulary, Fluency, and Comprehension in School Ecosystem that fosters Listening, Respect, and Self-Regulation. Reading skill development is slow and laborious in the beginning. Specialized instruction creates activation in areas of the brain necessary for reading. Dyslexia must be addressed through explicit, systematic instruction.

## Preparing: Last Trimester-Age 5

Ecosystem may provide rich language experiences but processing differences, working memory and rapid retrieval weaknesses and/or moments of inattention create gaps in language and specifically phonemic development.



# Working Beneath the Surface of Dyslexia



# Atlanta Speech School's Wardlaw School



## PARALLEL INTERVENTION

When professionals work in silos, each attempting to guide a child's reading brain toward reading proficiency, tutors, Speech-Language Pathologists, and Educators meet with the child outside of the classroom and each does what he/she determines to be of the most importance. The Child's development can become fragmented and without direction.

VS

## THE INTEGRATED INTERVENTION OF THE WARDLAW SCHOOL



Copyright S. Mims, et.al  
Atlanta Speech School 1997

# The Reading Program Every Child Deserves



## National Reading Panel – 1997-2000

Congress asked the NICHD to work with the U.S. Department of ED to evaluate the existing research and evidence to find the best ways of teaching children to read. What makes a good reader a good reader. The researchers chose the following components – Now known as the BIG 5.

- Phonemic Awareness
- Phonics Instruction/Decoding
- Fluency
- Vocabulary
- Comprehension



## Reading – The mapping of language onto symbols



### ■ Phoneme

- The smallest unit of language – an oral speech sound  
verbal/auditory /s/, /t/, /v/

### ■ Phonological Awareness

- The ability to hear, identify, count and manipulate words in sentences and word parts – verbal/auditory

### ■ Phonemic Awareness

- The ability to hear, identify, and manipulate the individual sounds (phonemes) in spoken words – verbal/auditory

### ■ Phonics

- Sound + symbol - Letter-sound correspondences necessary for the mastery of reading and spelling  
verbal/auditory/visual



## Phonemic Awareness/Phonics Instruction



The difference between phonemic awareness and phonics:

- phonemic awareness involves sounds in spoken words and phonics involves the relationship between these sounds and written symbols
- Instruction in phonemic awareness (PA) involves teaching children to focus on and manipulate phonemes in spoken syllables and words. PA instruction is frequently confused with phonics instruction, which entails teaching students how to use letter-sound relations to read or spell words.” NRP, 2000



## Phonological Awareness: Words in Sentences



*How many words do you hear in this sentence?*

*Show me the words you hear in this sentence.*

*fo*      *That*      *boy*      *loves*

Younger students may clap or draw dashes from left to right to indicate each word heard.

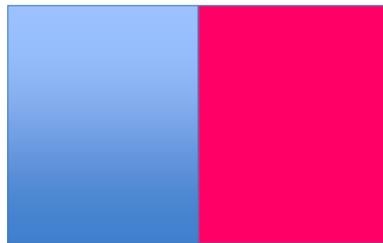


## Phonological Awareness: Compound Words



*Say: /cowboy/*

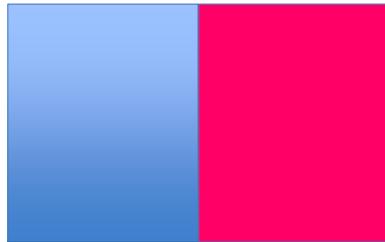
*Now say /cowboy/ but don't say /cow/*



## Phonological Awareness



Say: /pumpkin/  
Now say /pumpkin/ but don't say /kin/



## Phonemic Awareness Manipulation of Sounds in Words



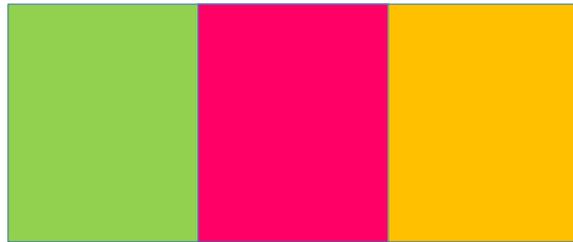
If this says /foz/,  
make it say /boz/.



Phonemic Awareness  
Manipulation of Sounds in Words



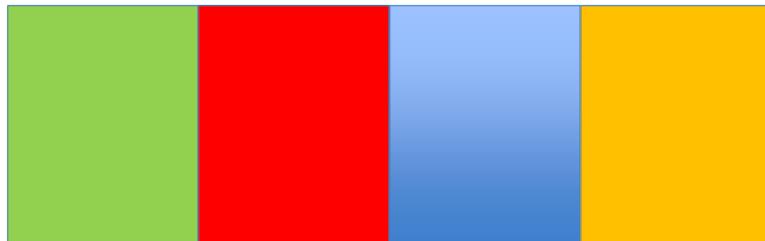
*If this says /boz/,  
make it say /baz/.*



Phonemic Awareness  
Manipulation of Sounds in Words



*If this says /baz/,  
make it say /blaz/.*



## Phonemic Awareness Assessment/Instruction



### Assessment:

CTOPP - Comprehensive Test of Phonological Processing – Torgesen, et. al

Assesses phonological awareness processing abilities related to reading in students from 5-24 years with this norm-referenced test.

Rosner, Jerome, Helping Children Overcome Learning Difficulties

Rosner, Jerome, Phonemic Awareness Skills Program (PASP)

Nonsense Syllables

Hearbuilder

Lindamood Phoneme Sequencing Program (LiPs)

Earobics

Teaching Reading Sourcebook (CORE)



## Putting It All Together



Provide direct Instruction in each of the following – Everyday

- Phonemic Awareness – 10 minutes
- Phonics – 15 minutes
- Vocabulary from text – 10 minutes
- Guided Reading – 15 minutes
- Comprehension Strategies – 10 minutes
- Fluency – 15 minutes

Time the components based on the needs of your students.

Add Ecosystem.



# Key Factors in Programming



- Explicit
- Systematic
- Provides repetition
- Overlearning
- Decoding and encoding taught together
- Higher frequency sounds and spellings taught first
- Separate introduction of visually similar letters
- Separate introduction of letters with similar sounds



## *Instruction: Teaching the Reading Brain Workshop Model for Differentiation*

*Sample K – 1<sup>st</sup> 120 minute Readers Workshop with 60 minute Writers Workshop  
(Students Rotate through Guided Reading plus 6 Literacy Stations, daily)*

Time:	Guided Reading (Oral Lang. Dev. 1 <sup>st</sup> half of K)	Word Work Center (Explicit and Systematic Phonics Instruction – Decoding)	Library Center (Independent Reading or Buddy Reading)	Visual & Spatial Analysis Center (e.g. geoboards)	Phonemic Awareness, Listening Center	Word Work Center (Alphabetic principle, Print Awareness)	Write Around the Room Center	"Brady Doll" Expressive Lang. Center (Big Books)
8:30 – 8:45	Group A	Group D	Group B		Group C			
8:45 – 9:00		Group B	Group D	Group C				
9:00 – 9:15	Group B	Group A	Group C	Group D				
9:15 – 9:30		Group C	Group A		Group D			
9:30 – 9:45	Group C			Group A		Group B	Group D	
9:45 – 10:00				Group B	Group A			Group D
10:00 – 10:15	Group D				Group B	Group C	Group A	
10:15 – 10:30						Group A	Group C	Group B
10:30 – 10:40								
10:40 – 10:55								
10:55 – 11:00								
11:00 – 11:25								
11:30 – 12:15								

