



Reading and the Brain: What's the Connection?




A photograph of three young children sitting on a bench and reading books. The image is framed with a yellow border.

Webster's Definition of the Brain:

The organ of the body in the head that controls functions, movements, sensations, and thoughts.



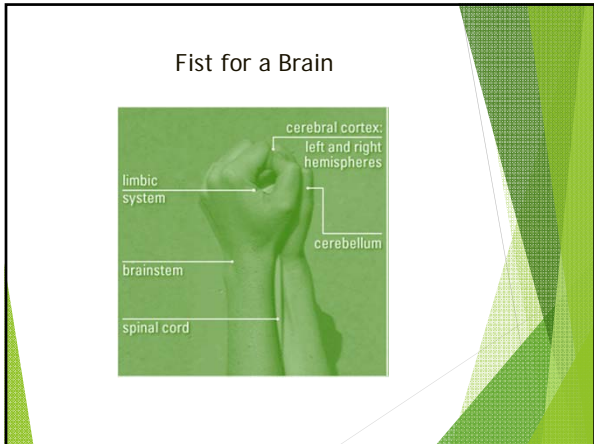
A 3D anatomical diagram of a human brain, showing different regions in various colors (red, green, blue, yellow) against a blue background. The diagram is framed with a blue border.

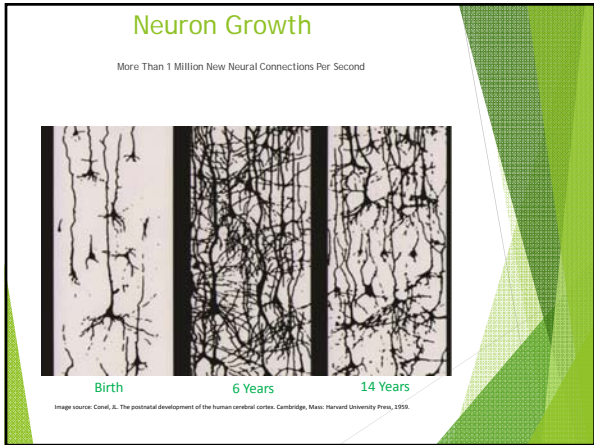


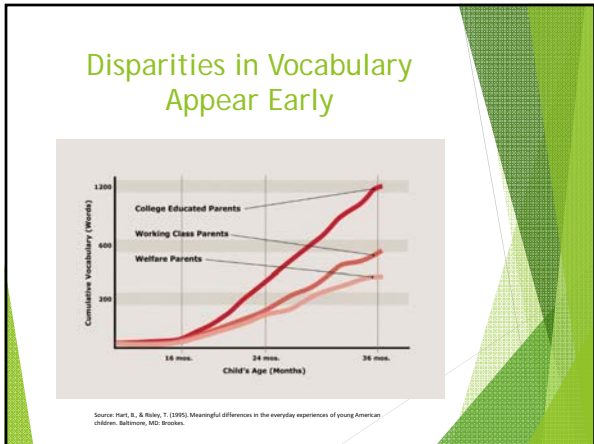
A silhouette of a human head in profile, facing left. Inside the head, a glowing yellow and orange brain is shown with radiating light rays. The image is framed with a yellow border.

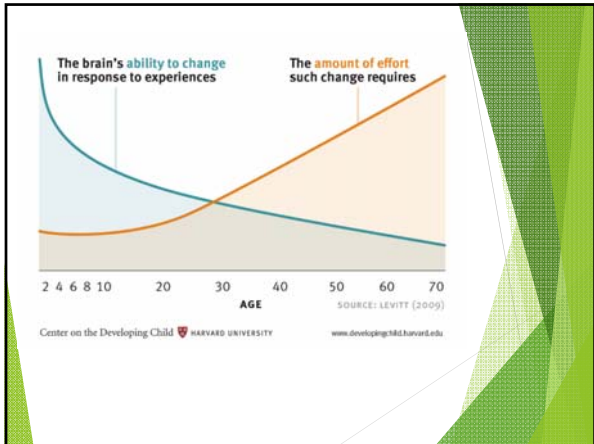
Making sense of the brain's mind-boggling complexity isn't easy. What we do know is that it's the organ that makes us human, giving people the capacity for art, language, moral judgments, and rational thought. It's also responsible for each individual's personality, memories, movements, and how we sense the world.

science.nationalgeographic.com









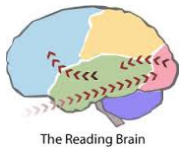
Good News!

- Brain development is lifelong
- Learning is the brain's business
- The brain incorporates experience into its architecture
- The brain is a pattern and novelty seeker



Vital Information

- ▶ In the 21st century, the ability to understand what we read has become the most fundamental of all academic and work-related competencies.
- ▶ To acquire the skill of reading an interface must be created between vision and language.



The Reading Brain

Oral Language...

- ▶...is the foundation for literacy development.
- ▶...involves speaking and listening.
- ▶...is essential for children to gain knowledge about the world.

How Important is Oral Language Development?

- The National Early Literacy Panel found that reading comprehension depends on language abilities that begin developing at birth.
- Children who lag behind their peers in language development are at-risk for later reading difficulties
- Good oral language skills allow children who have difficulty decoding to still comprehend meaning.
- Vocabulary knowledge is strongly related to reading proficiency and overall academic success

Foundational Skills for Reading Preparedness

- ▶ Print Motivation
- ▶ Print Awareness
- ▶ Narrative Skills
- ▶ Vocabulary
- ▶ Phonological Awareness
- ▶ Letter Knowledge

7 Ways Reading to Children Wires Their Brains for a Better Future

1. It provides an important human connection.
2. It establishes associations between pictures and words.
3. It builds neural connections through repetition.
4. It fosters imagination.
5. It helps children make sense of the world.
6. It builds language skills.
7. It establishes reading as something that's fun, not a chore.



RewireMe.com (2014)

Brain Summary



So What Do We Do Now??



I take it you already know
 Of touch and bough and cough and dough?
 Others may stumble, but not you
 On hiccough, thorough, slough, and through?
 Well done! And now you wish, perhaps,
 To learn of less familiar traps?

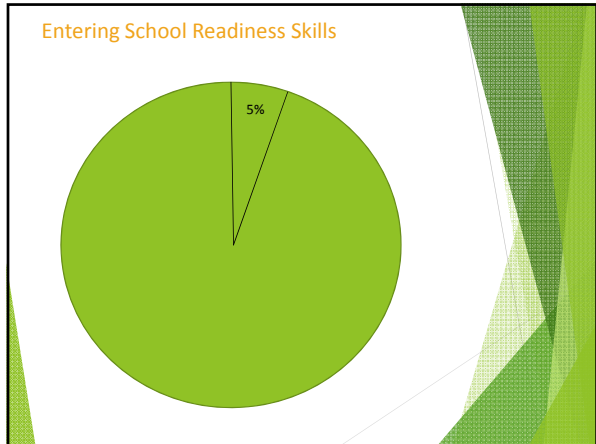
Beware of heard, a dreadful word
 That looks like beard and sounds like bird.
 And dead; it's said like bed, not bead;
 For goodness sake, don't call it deed!
 Watch out for meat and great and threat,
 (They rhyme with suite and straight and debt).
 A moth is not a moth in mother.
 Nor both in bother, broth in brother.

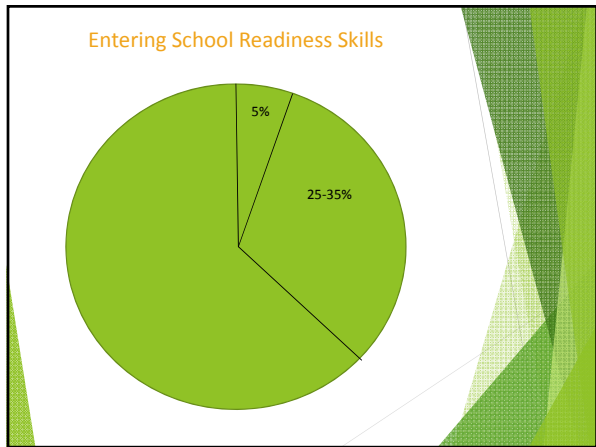
And here is not a match for there,
 And dear and fear for bear and pear,
 And then there's dose and rose and lose –
 Just look them up – and goose and choose,
 And cork and work and card and ward,
 And font and front and word with sword.
 And do and go, then thwart and cart.
 Come, come, I've hardly made a start.

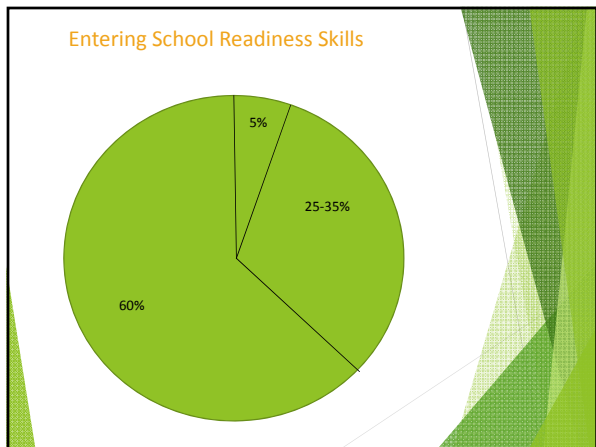
A dreadful language? Why, man alive,
 I'd learned to talk it when I was five.
 And yet to read it, the more I tried,
 I hadn't learned it at fifty five.

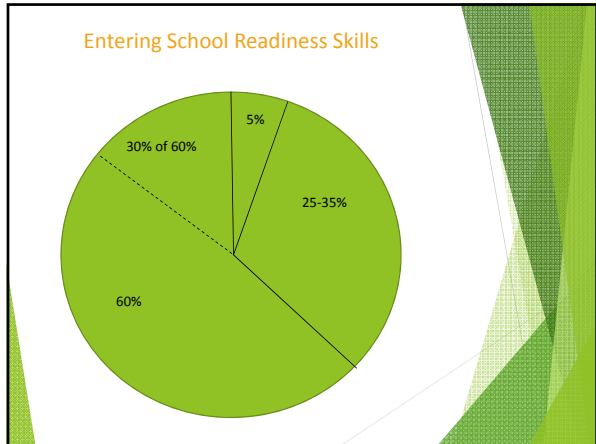
Why is it that the
 hardest thing
 children are ever
 asked to do is the
first thing they're
 asked to do?

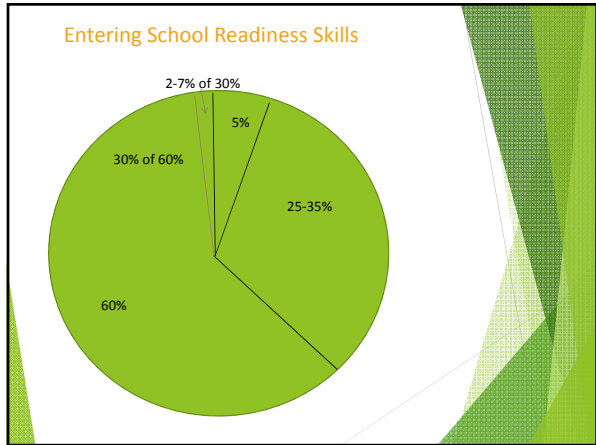
The only important
 thing is that the first
 and last letters are at
 the right place. The
 rest can be a total mess
 and you can still read it
 without a problem.











Phonemic Awareness vs. Phonics

Early Phonemic Awareness	Phonics
<ul style="list-style-type: none">▶ Listening▶ Rhyming▶ Alliteration▶ Syllables▶ Onset and Rime▶ Manipulating Sounds▶ Auditory▶ Strong Predictor of Early Reading Success	<ul style="list-style-type: none">▶ Connecting the printed symbol with the corresponding sound▶ Visual

No More Letter of the Week

- ▶ Removing letters from meaningful context removes the purpose of the letter.
- ▶ LOTW is too fast for some and slows others down. It doesn't meet the needs of all learners and can't be differentiated.
- ▶ Children who struggle the most with learning letters are those least helped by learning letters in isolation. They need something to help them make the connection.

No More Letter of the Week? Now What?

- ▶ Environmental Print
- ▶ Student Names
- ▶ Literature
- ▶ Incorporate Letters into Daily Activities
- ▶ Phonemic Awareness

Collections



Talk is Cheap...

...but for young children it is priceless.

By building vocabulary and content knowledge we are increasing a child's ability to learn to read.

Domain Specific Content

A-Rod hit into a 6-4-3 double play to end the game.



Phonology

English has...

- 25 consonant sounds
- 19 vowel sounds
- 44 speech sounds (phonemes)

BUT...

- 250+ graphemes (letter patterns and spelling)

ghoti

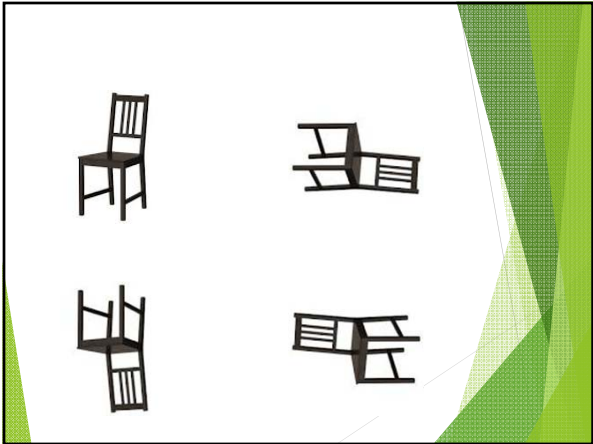
- /gh/ as in laugh
- /o/ as in women
- /ti/ as in nation

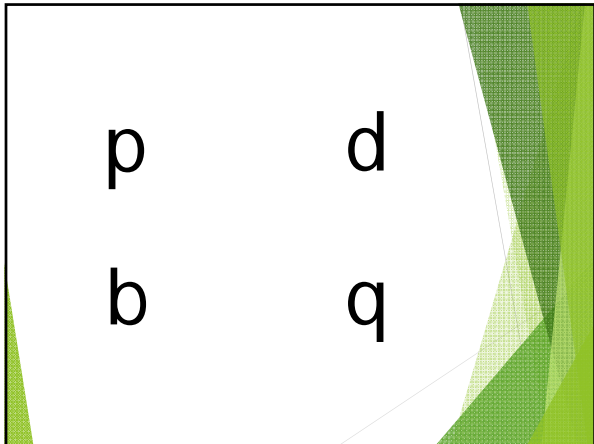
fish

While sitting on the **bough**
of the tree and looking
through the leaves,
I choked on my **doughnut**
and **coughed**.
I **thought** that pastry was too **tough!**

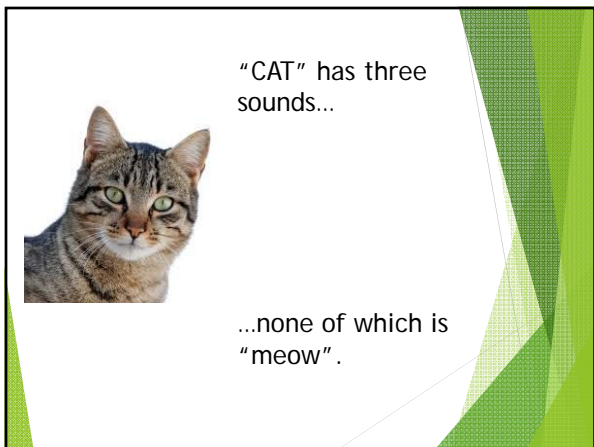
Reading is making sense, not sound, out of the symbols on the page.

“To learn an alphabetic script, we must learn to attend to that which we have learned not to attend to.”
Marilyn Adams 1990









Language Development



18 months - new word every 2 hours



Age 3 - 900 words



Age 5 - 3,000-8,000 words

Reading Never Just "Happens"

- ▶ "Children are wired for sound, but print is an optional accessory that must be painstakingly bolted on."
- ▶ It took our species 2,000 years to make the cognitive breakthroughs necessary to learn to read with an alphabet. We expect children to be able to do the same in about 2,000 days.
- ▶ We speak at a rate of 125-180 continuous words per minute.
- ▶ Blending is easier with continuant phonemes.

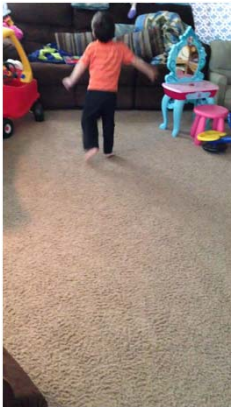
The Language of Books

- ▶ The special vocabulary in books doesn't appear in spoken language.
- ▶ Consider the "nursery rhyme effect"
- ▶ Children who come to kindergarten in the bottom 25 percentile of vocabulary remain behind in vocabulary and reading comprehension.

Three Tiers of Vocabulary

- ▶ Tier 1 - Basic vocabulary (run, book, girl, sad)
- ▶ Tier 2 - High frequency/cross curricular; "academic" words (masterpiece, fortunate, industrious)
- ▶ Tier 3 - Low frequency and content specific (economics, asphalt, Revolutionary War, crepe)

Tier 3 Words in Action!



Tier 1, Tier 2 or Tier 3??

justify	big	expand
peninsula	table	orange
predict	maintain	isotope
sauté	wrench	family

Teaching Vocabulary

- ▶ Children need explicit and implicit instruction
- ▶ Be intentional in word selection
- ▶ Build word meaning through knowledge networks
- ▶ Children need repeated exposure to gain vocabulary

Increasing Vocabulary Through Storytelling



Increasing Vocabulary Through Storytelling

<https://www.youtube.com/v/-OZ79GZMZZ4>
