

Bridging the Gap Between the Science of Reading and Classroom Practices

**Virginia Joint Coalition of
Learning Disabilities and
Literacy**

Speaker:

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Educational Consultant,
Mobile, AL

About your speaker, J. Richard Gentry, PhD

- Elementary education major, UNC-Chapel Hill
- Third, fourth, and fifth grade teacher
- PhD in Reading Education, University of Virginia
- Directed Reading Center at Western Carolina University for 16 years
- For three decades –a Researcher, Author, & Educational Consultant
- Author of 17 books and a spelling textbook series
- Over 1 million readers on *Psychology Today* blog
- A friend to all teachers, parents, and educators with a passion for teaching literacy
- Coauthor, *Brain Words*

BrainWords

How the Science of Reading Informs Teaching



J. Richard Gentry

Gene P. Ouellette

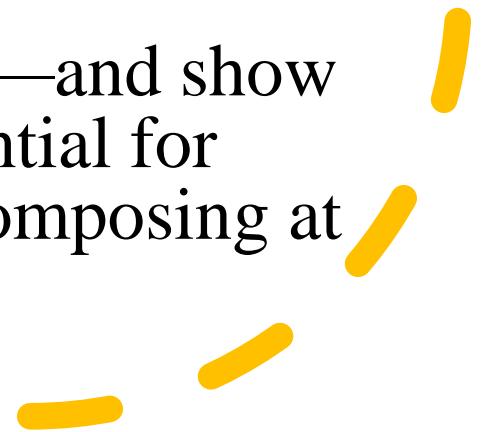
A large orange circle is positioned on the left side of the slide, partially overlapping the white background.

In this session we rethink how we teach literacy through the lens of the

Science of Reading. We will focus on integrated word study for teaching:

- Phonological Awareness
- Spelling
- Phonics
- Morphology & Vocabulary
- Handwriting

Prek through Grade 2 and beyond—and show how all of these elements are essential for reading comprehension and text composing at every grade level.

Three small, yellow, horizontal capsule-shaped bars are scattered in the bottom right corner of the slide.

SESSION OVERVIEW

SECTION
1

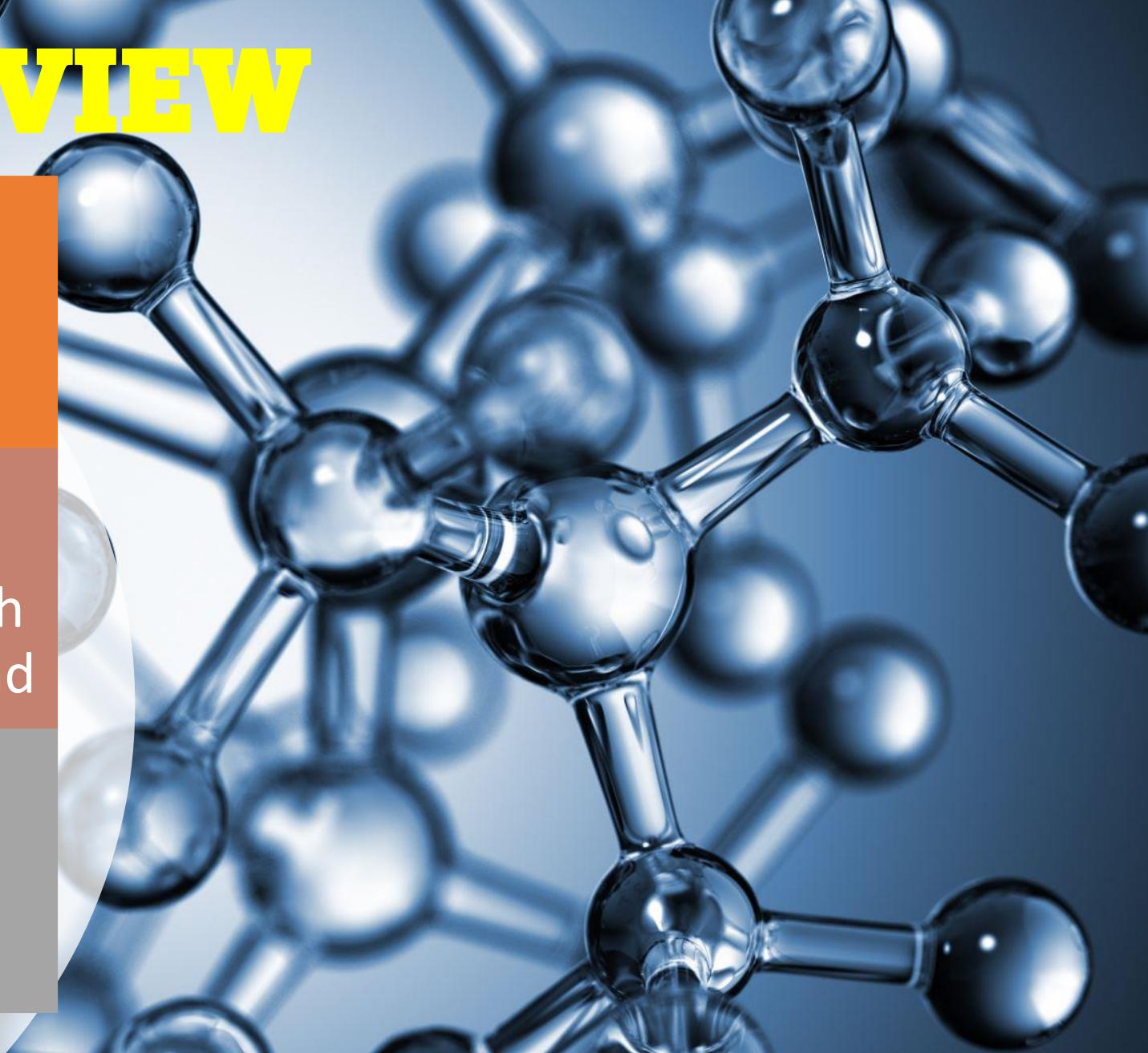
The Science of Reading—
What happened? What
needs to change?

SECTION
2

Beginning Literacy
Development—PreK through
2—Then Grade 2 and Beyond

SECTION
3

Understanding and
Overcoming Dyslexia



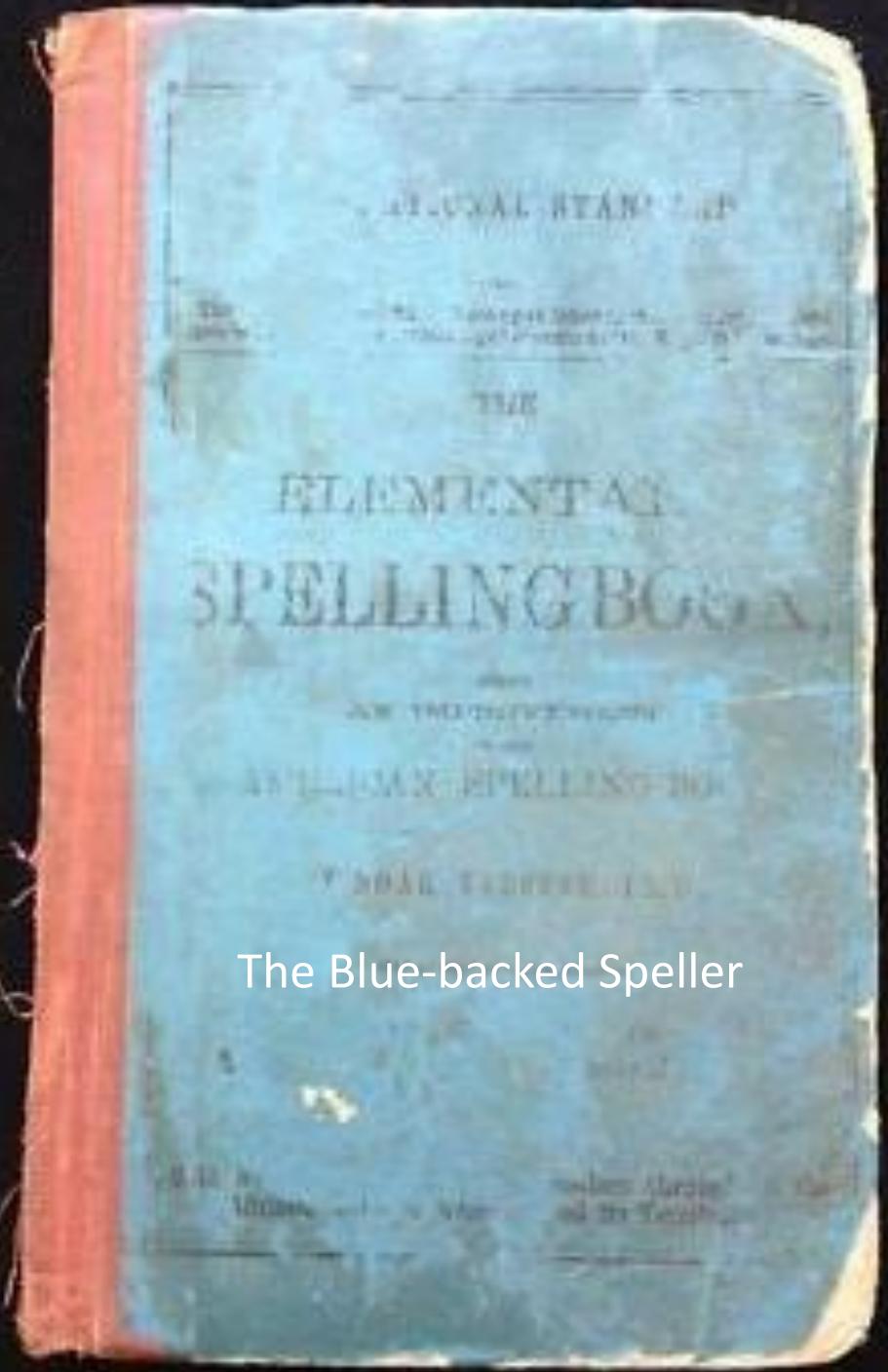
We want to understand both the **SCIENCE** and some **HISTORY** of how best to teach literacy along with **BEST CLASSROOM PRACTICES!**

- Learn what “Brain Words” are & How the reading brain works.
I'll make the architecture of the reading brain easier to understand!
- Discover the essential and foundational role of integrated spelling word study for reading.
- Leave with science-based practices from the latest cognitive science and neuroscience

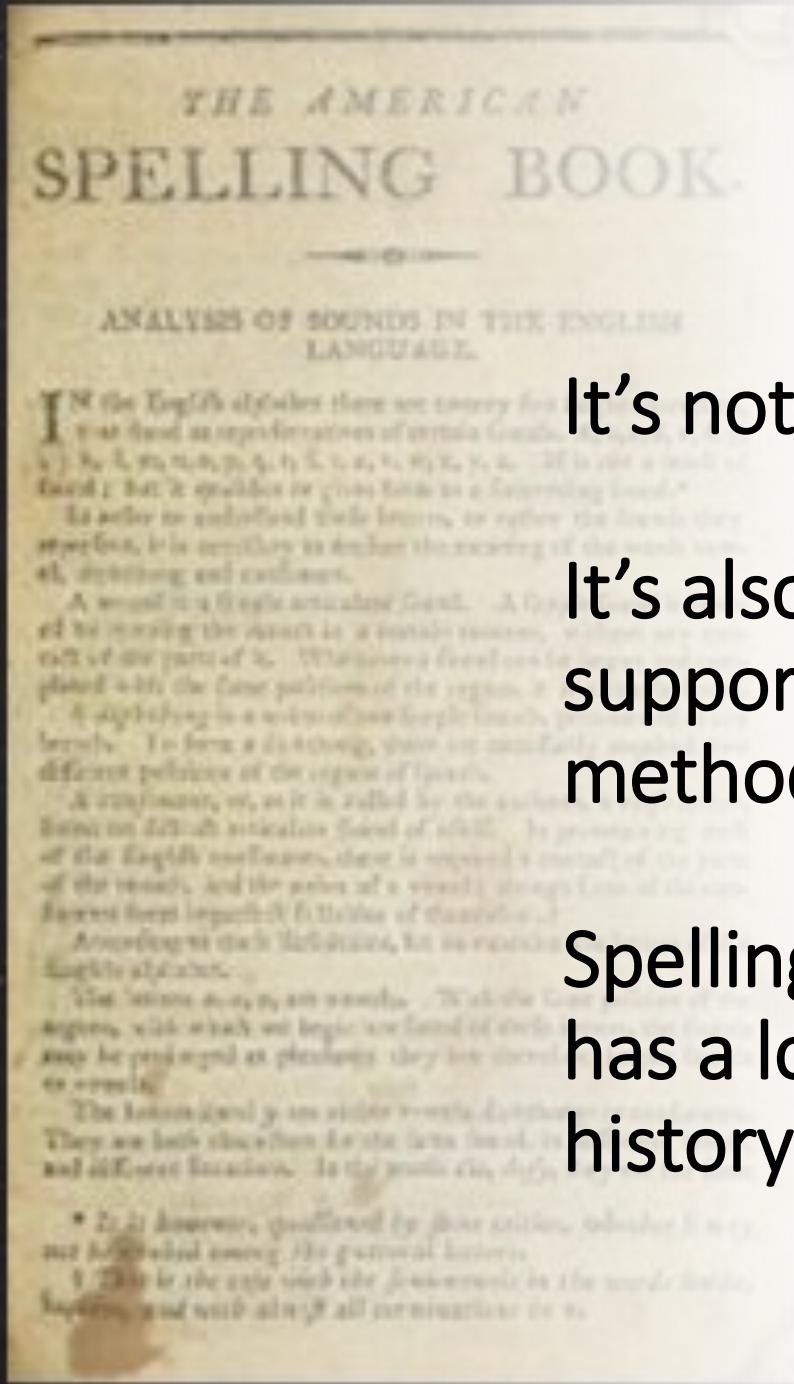
You will learn how you can build a dictionary in the child's brain—literally a gift to the child for a lifetime.

**In a moment well look at the science—
but first here's a history lesson about teaching reading.**





The Blue-backed Speller



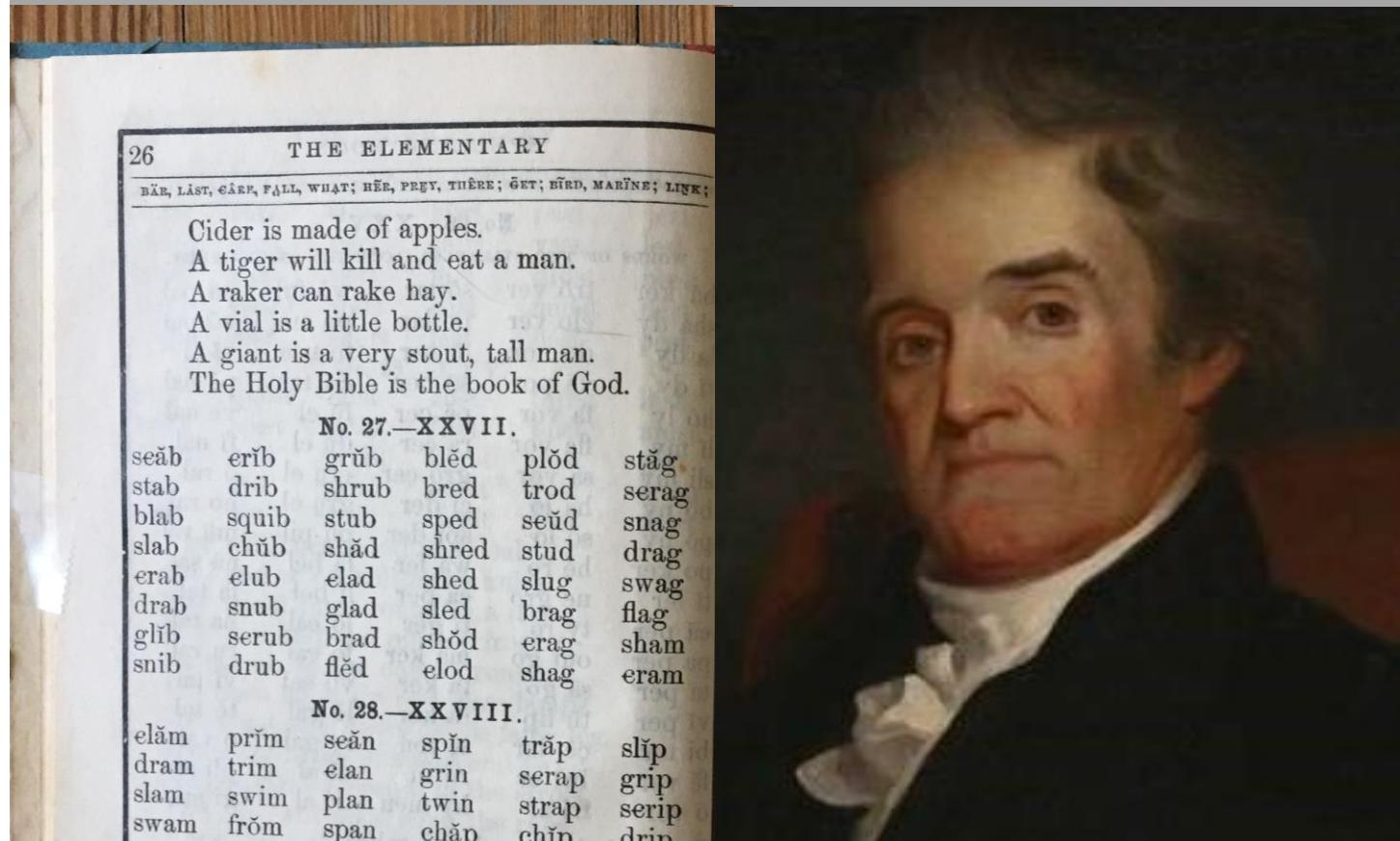
It's not only science.

It's also **history** that supports spelling-to-read methodology.

Spelling-to-read methodology has a long and successful history in America.

Noah Webster—Founding Father of American Education 1758-1843

Wrote the first American reading textbook.

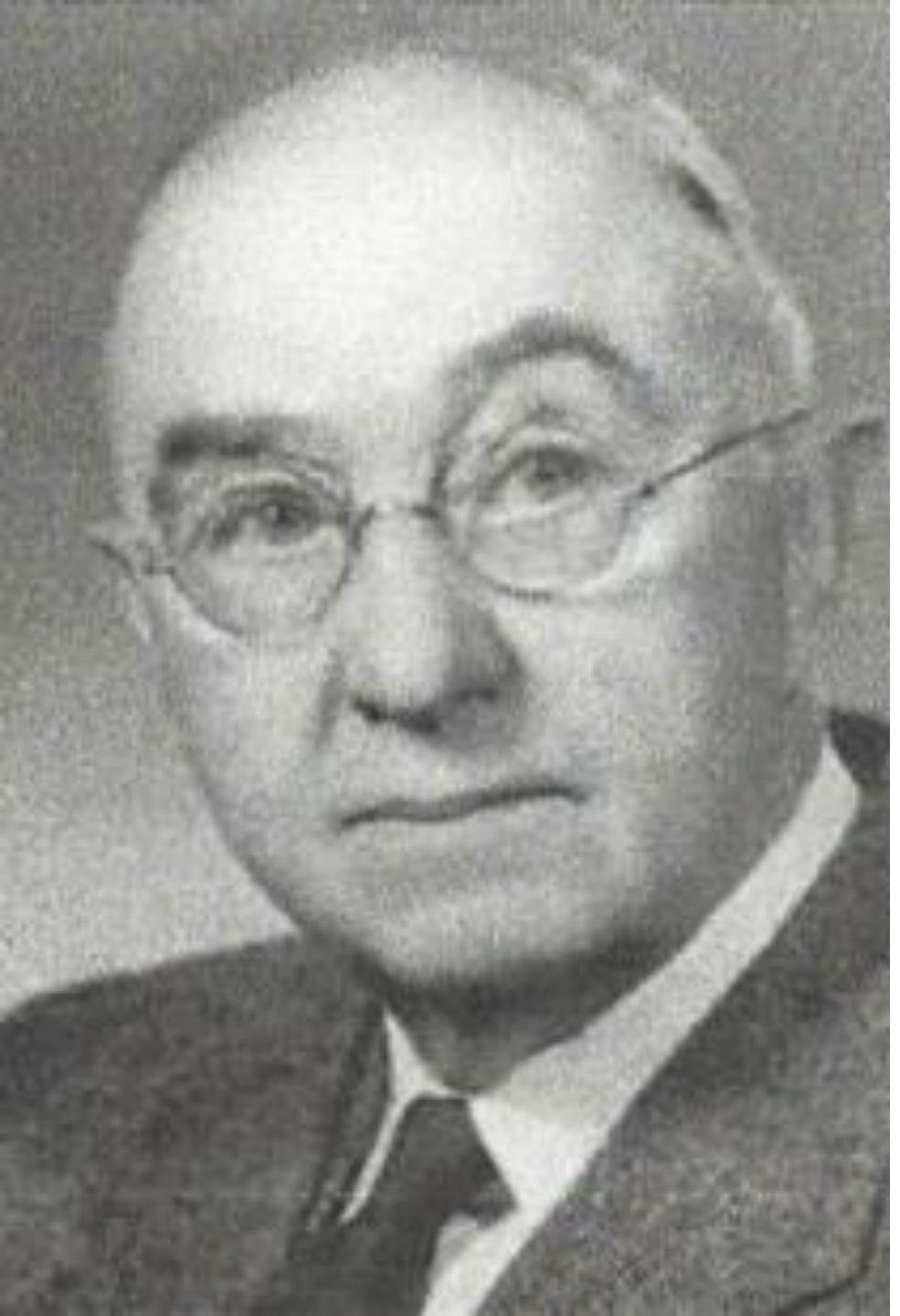


His reading textbook started with the “Blue-backed Speller.”

It taught five generations of Americans to read, spell, and pronounce words.

By 1890 it had sold over 80 million copies.

Webster emphasized mapping pronunciation of words to syllable patterns.



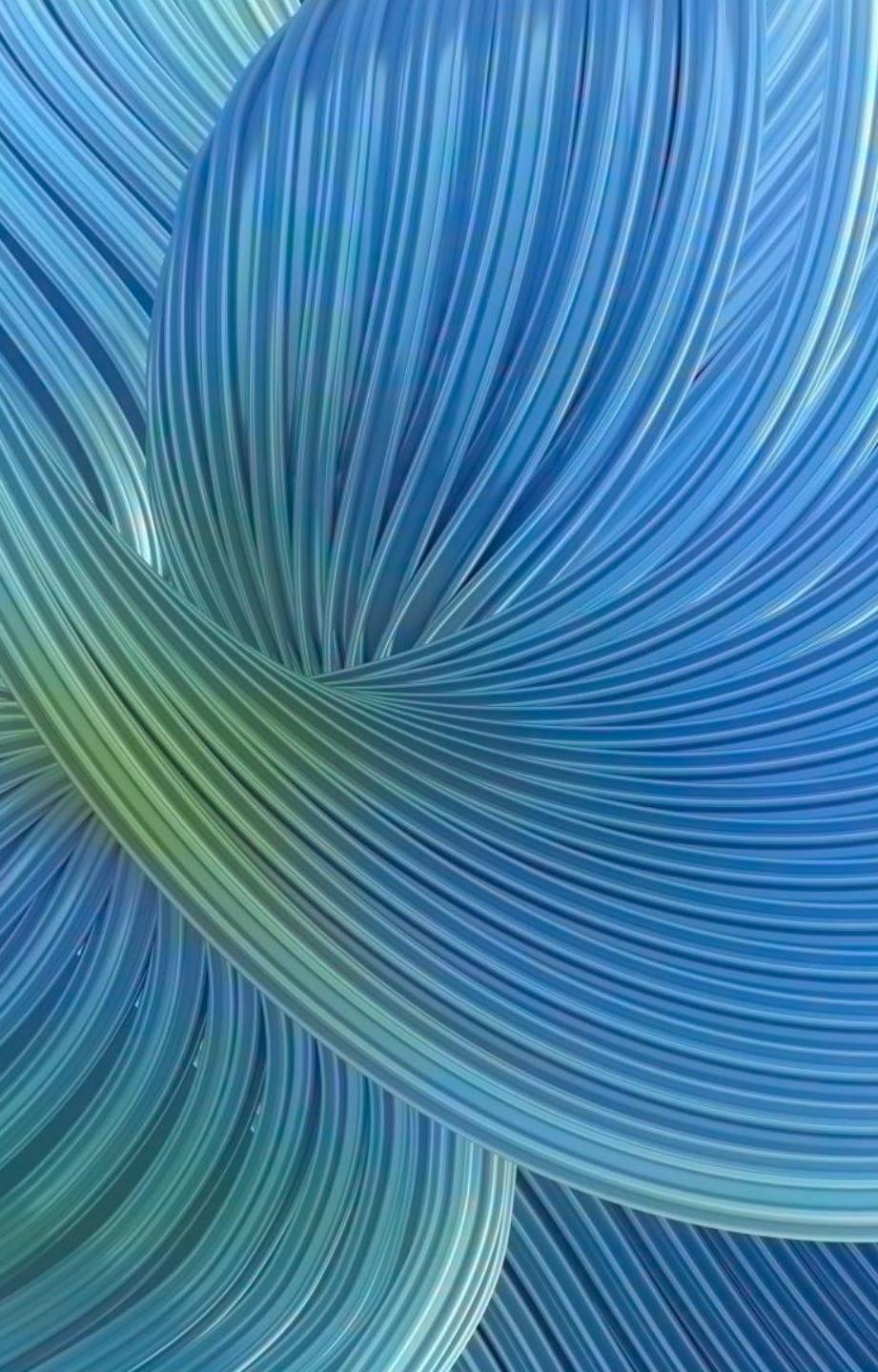
Earnest Horn—Father of Spelling Research 1882-1967

He was a pioneer in Spelling – much of his research was conducted at his University of Iowa lab school.

Horn was the greatest expert on spelling in the early 20th Century.

Horn was a proponent of:

- **Grade-by-grade explicit spelling instruction**
- **Spelling-to-read methodology**
- **Learning to spell by syllable types**
- **Spelling books**



So here we are today—238 years later
supporting the following:

An *integrated* comprehensive word study approach

An approach based on science

A grade-by-grade developmental curriculum

Streamlined and easy-to-follow lessons

No boring worksheets; rather, engaging activities for students

Not just memorizing words for a test, but brain words for long term retention and use

Connections to all the foundational skills at every grade level

BUILDING YOUR KNOWLEDGE surrounding the Science of Reading

Facts According to Science (Self-testing)

1. At what grade level
should the major brain
circuitry for reading be
in place?

2. What is the best
differentiator between
good and poor readers?



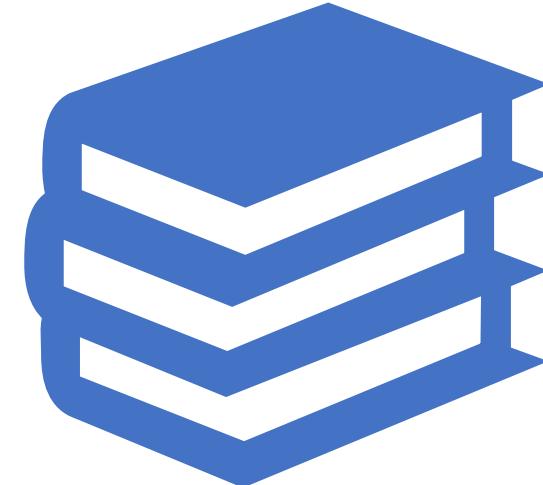
Beginning to Read: Thinking and Learning about Print
(Marilyn Adams, 1990)

“The best differentiator between good and poor readers is repeatedly found to be their knowledge of spelling patterns and their proficiency with spelling–sound translations.”

Key Point: Effective spelling instruction teaches children to read.

- .
- .
- .
- .
- .
- .

What about the neuroscience?



Facts from Neuroscience

“In neuroimaging studies, poor readers show atypically low activity in a part of the brain that processes the spelling of words.”
Seidenberg—*Language at the Speed of Sight* (2017)

- Good readers can spell.
- Poor readers don’t spell words very well.
- Most learning disabled readers struggle with spellings.



Facts According to Science (self-testing)

3. What's the best predictor of reading proficiency?

Not Phonemic Awareness
Not Phonics Knowledge

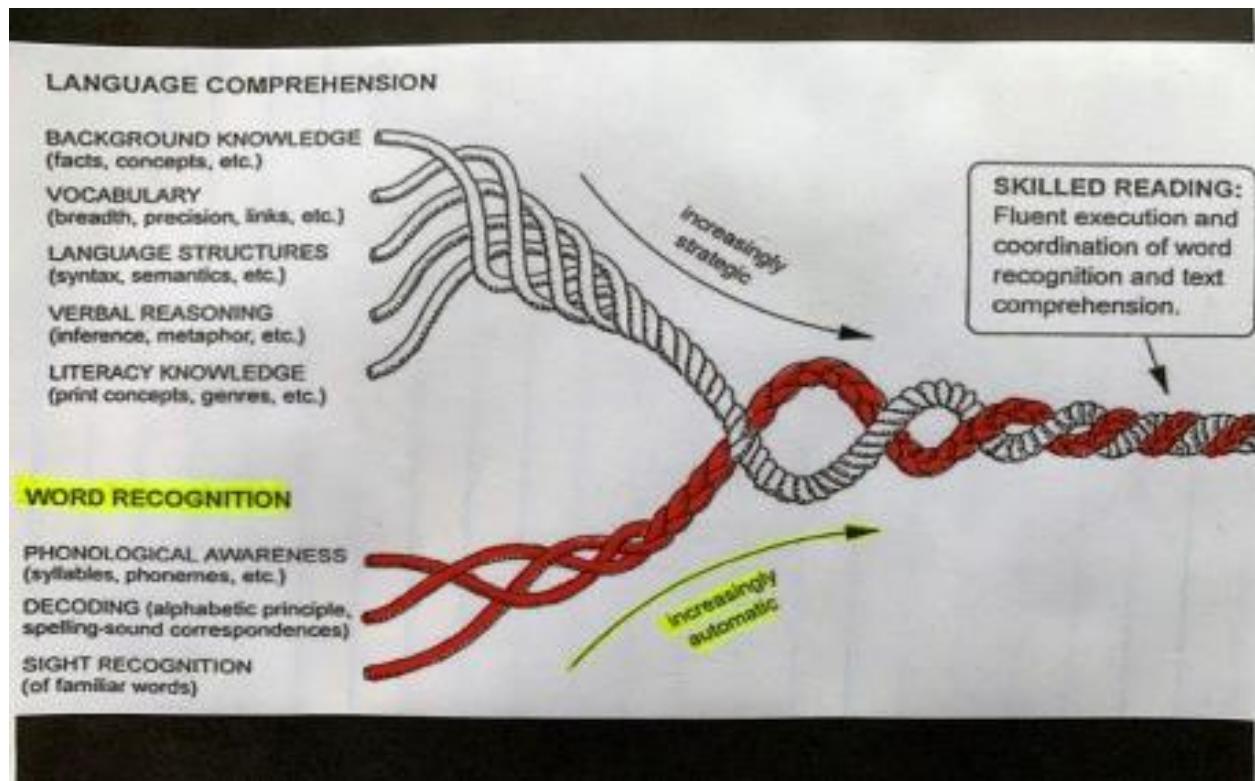
The best predictor of reading proficiency?

Answer:

Automatic Word Reading!

&

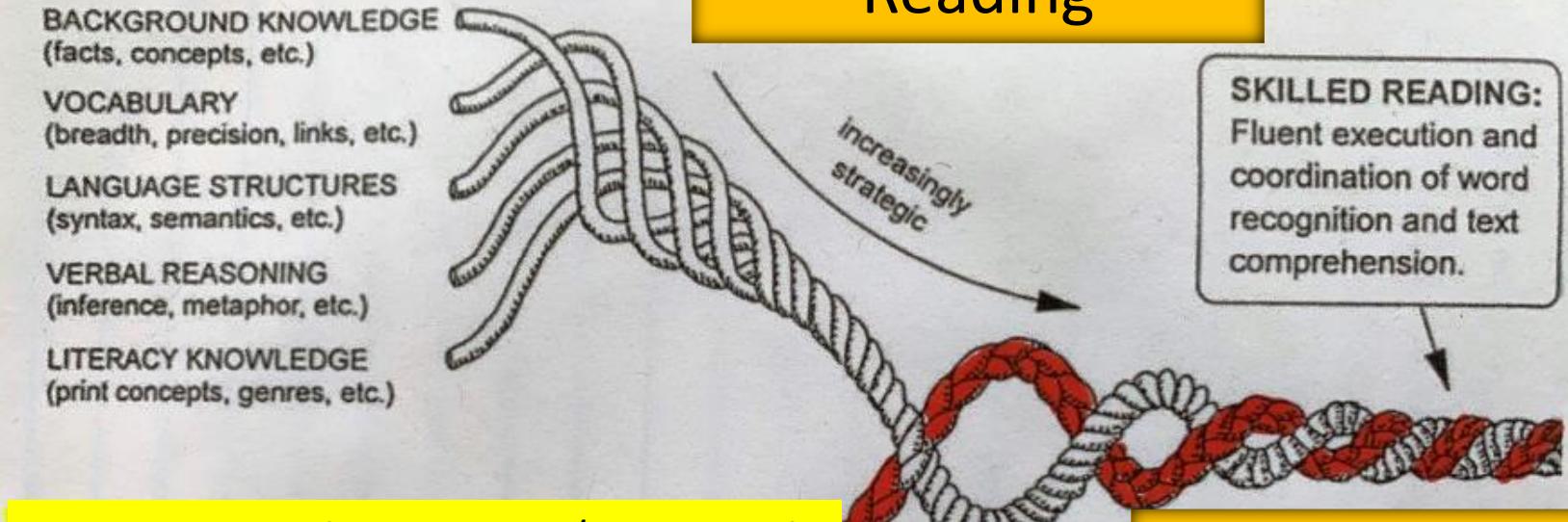
Automatic Spelling



Literally hundreds of studies support that **Automatic Word Reading** is the best predictor of reading proficiency.

LANGUAGE COMPREHENSION
BACKGROUND KNOWLEDGE (facts, concepts, etc.)
VOCABULARY (breadth, precision, links, etc.)
LANGUAGE STRUCTURES (syntax, semantics, etc.)
VERBAL REASONING (inference, metaphor, etc.)
LITERACY KNOWLEDGE (print concepts, genres, etc.)

If you want Skilled Reading



Automatic Word Recognition/Brain Words

PHONOLOGICAL AWARENESS (syllables, phonemes, etc.)
DECODING (alphabetic principle, spelling-sound correspondences)
SIGHT RECOGNITION (of familiar words)

Then Teach Spelling & Automatic Word Reading

Dr. Hollis Scarborough—
creator of the
**Famous
Reading Rope**
and senior scientist
at Haskins
Laboratories
Supports
**The Simple
View of
Reading**

How does your brain read?

Activate your Word Form Area

Read this:

As skilled readers, we are able to quickly and accurately recognize printed words without much effort. Indeed, you are most likely finding it no real chore to read this text now, and it has thus far taken only seconds of your time.

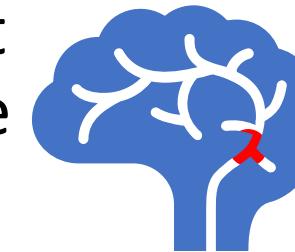
To comprehend these two sentences you activated 42 brain words. You read each of the 42 words automatically using the spelling!



Here's what happened:

You see each word as your eyes move from left to right.

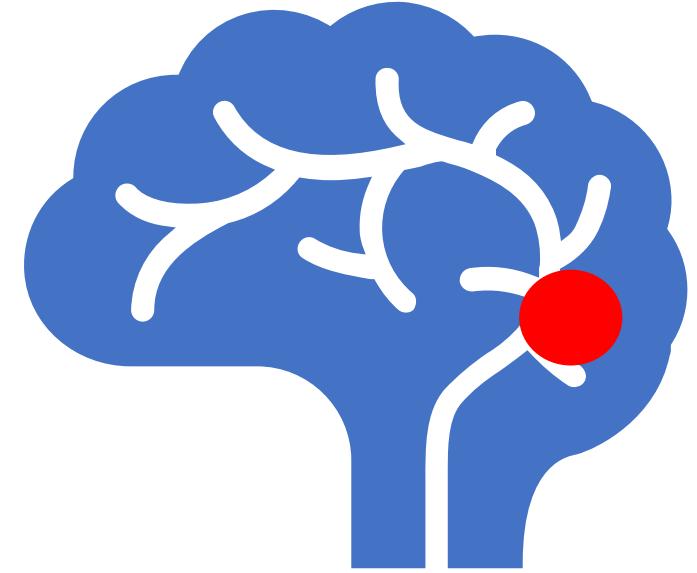
As you see each word on the page, the brain “lights up” a visual image of the word’s spelling in the “dictionary” in your brain. It’s automatic (because the word’s correct spelling is in your longterm memory) so you don’t even recognize that you are using the spelling.



Your brain connects to the already existing sounds and meaning of each word—in your spoken language—and you comprehend.

Brain words are internal visual neural representations of *spelling* in the reading brain's *word form area*.

Metaphorically, the word form area is the dictionary in the brain critical for proficient reading and writing.

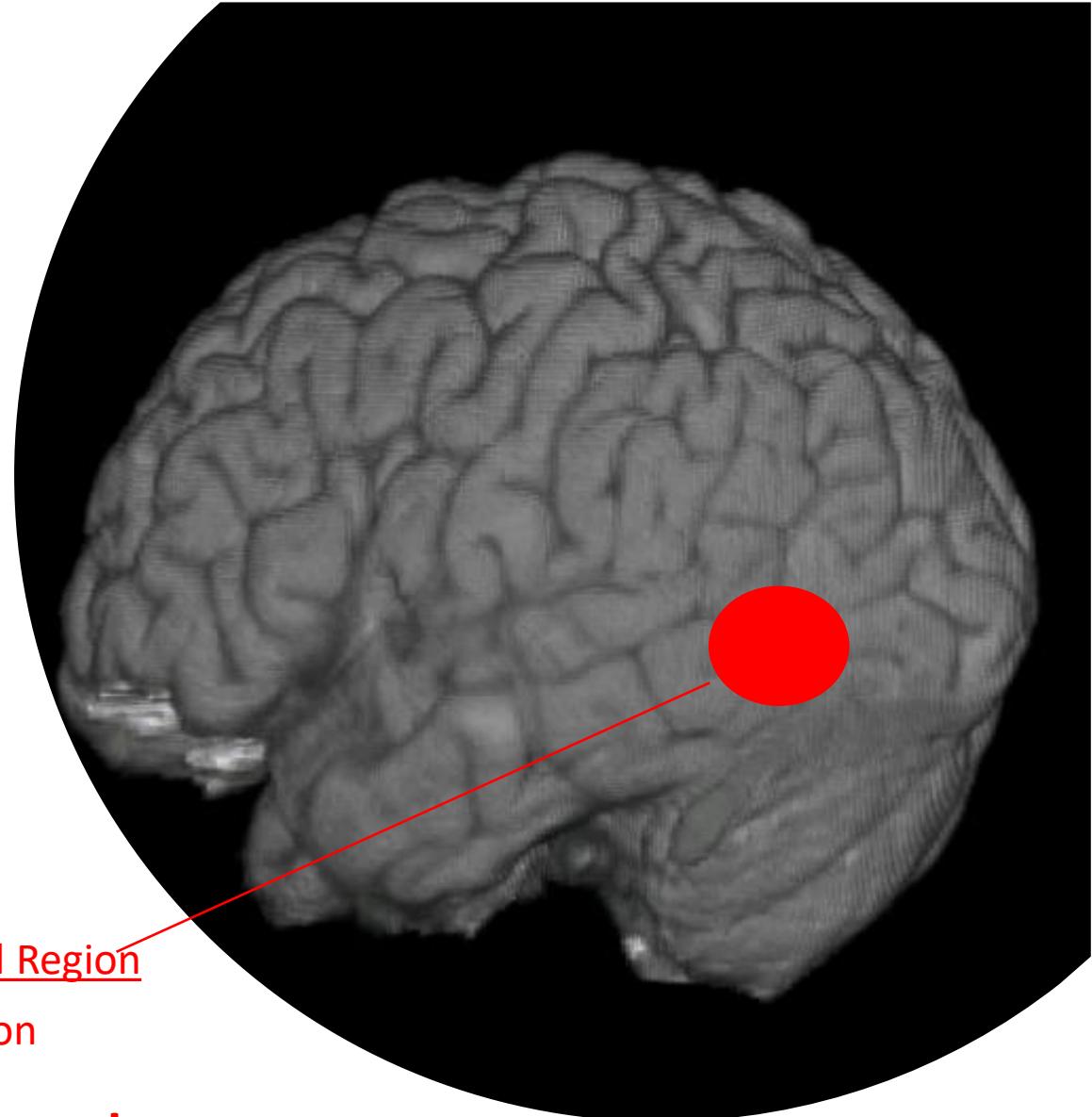


Build a Spelling Dictionary in the Brain

Slide from “Brain Imaging and Reading” presentation by neuroscientist Dr. Guinevere Eden—Georgetown University

Occipito-Temporal Region
-Word identification

-Visual Word Form System



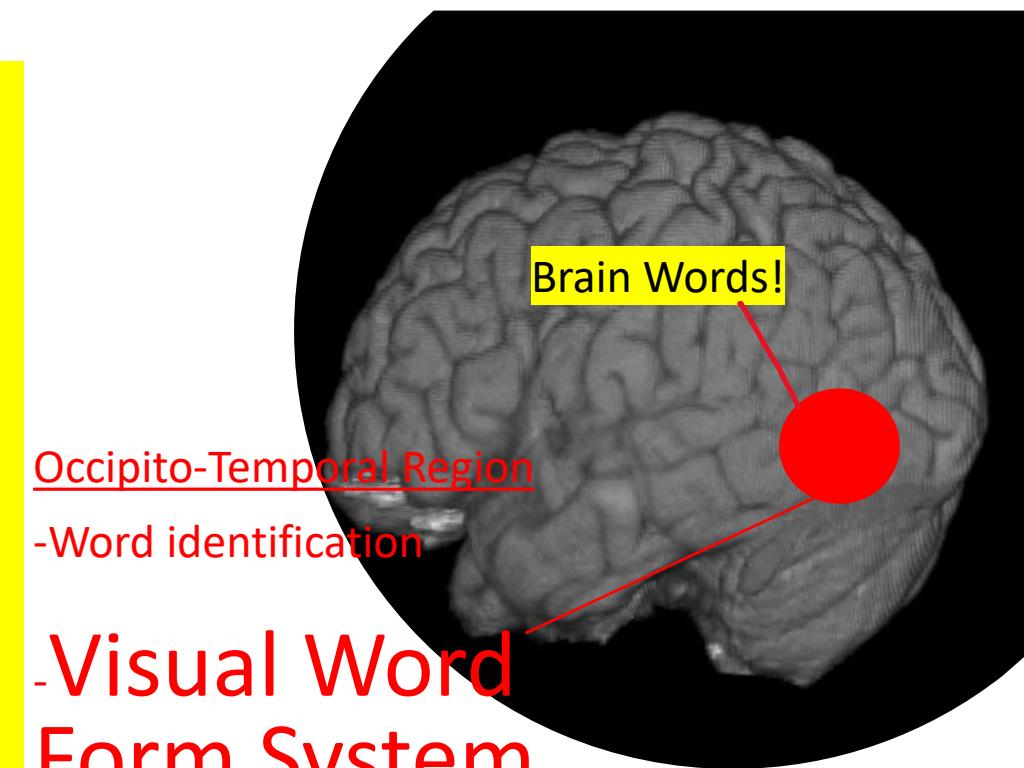
Here's how it works!

In the words of Linnea Ehri, a thought leader in the science of reading whose supports the simple view of reading:

“Spelling knowledge is essential to the brain’s reading architecture.

To connect the alphabet code on the page to circuitry enabling reading comprehension

the reader must use spelling.”



What is the result of not doing explicit Word Study for Spelling & Automatic Word Reading in many of our schools?
Over three decades of horrible reading scores—especially for

Decades of Flatlined NAEP Reading Scores



- Children in low socially-economic schools
- Children of color
- ELs
- Children in Special Education
- Children at risk for learning disability—including dyslexia

If we have been missing facts based on science, we want guidance from the best scientific minds to tell us the facts, that's instruction.

I became an expert on “Brain Words” when I met a renowned Canadian developmental psychologist and reading scientist from Mount Allison University in New Brunswick. We became a reading scientist and veteran educator author team.



J. Richard Gentry, Ph.D.

Gene P. Ouellette, Ph.D.

Gene has a gift as a scientist...
Spends time in the classroom —
Interprets science for teachers

Invented Spelling in Kindergarten as a Predictor of Reading and Spelling in Grade 1 (Ouellette & Sénéchal, 2017)

Developmental Psychology. 53 (1) 77– 88.
<http://dx.doi.org/10.1037/dev0000179>

Psychology Today blog

[J. Richard Gentry Ph.D.](#)

[Raising Readers, Writers, and Spellers](#)

Landmark Study Finds Better Path to Reading Success

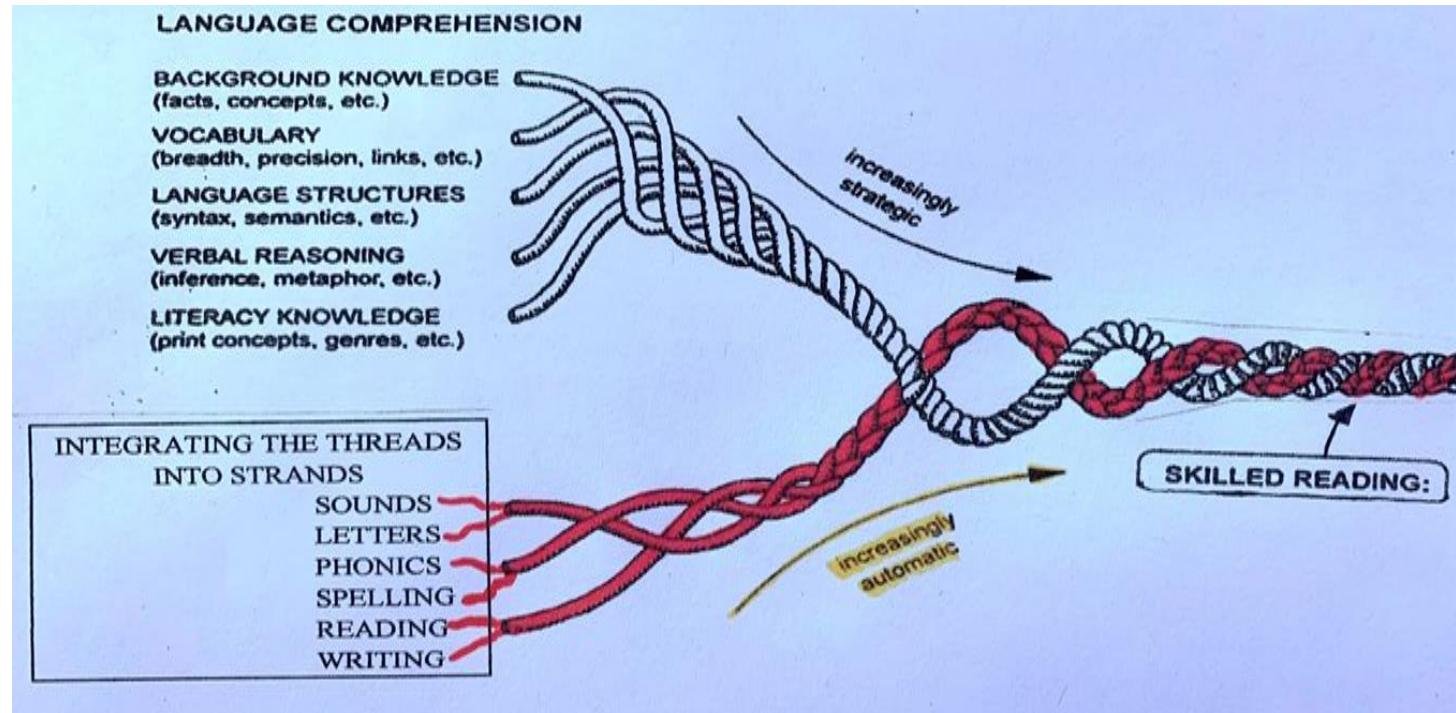
In a longitudinal study they tracked over 160 kindergartners for a year to near the end of first grade and assessed oral vocabulary, alphabet knowledge, phonological awareness, phonics, and invented spelling.

Posted Mar 30, 2017



In the Landmark Study, word study and thinking when inventing spellings enabled kids to better understand:

- what a word is
- that words in their spoken language are made up of **sounds**
- that these sounds can be represented by **letters**
- that sounds and letters in words go from **beginning to ending** and **left to right**
- that they can decode and **read** with **letter-to-sound mappings**
- that they can **spell** and write messages with **sound-to-letter mappings**



Gene's landmark study demonstrated...

When kids followed the Dr. Linnea Ehri word reading and Gentry developmental spelling phase trajectory:

- Better with alphabet knowledge!
- Better with phonemic awareness!
- Better readers!
- Better conventional spellers!

Analyzing words and inventing spelling was a key building block to reading and spelling!

Here's what **Invented Spelling** and the **Spelling-to-Read Method** are all about: (Moller, 2022)

- Inventing spelling **stimulates the development of phoneme awareness and letter knowledge** — two of the most important prerequisites of reading development (Hume et al, 2012).
- “Inventing spelling involves both an internal **analysis of words** into their sounds and **mapping appropriate letters or chunks of letters to sounds**.
- At the same time invented spelling goes beyond phonemic awareness and letter knowledge in that **invented spelling requires active USE of the orthographic code.**

Adapted from: Effects of Integrated Spelling in Phonics Instruction for At-Risk Children in Kindergarten, a Danish study by Moller et al, published in RWQ. (2022)

What should end of First Grade invented spelling look like?

37 Brain Words
+ 7 Invented Spellings
= 44 word story

WHAIR for *wear*

SIS for *size*

EVERYWHAIR for *everywhere*

CLIME for *climb*

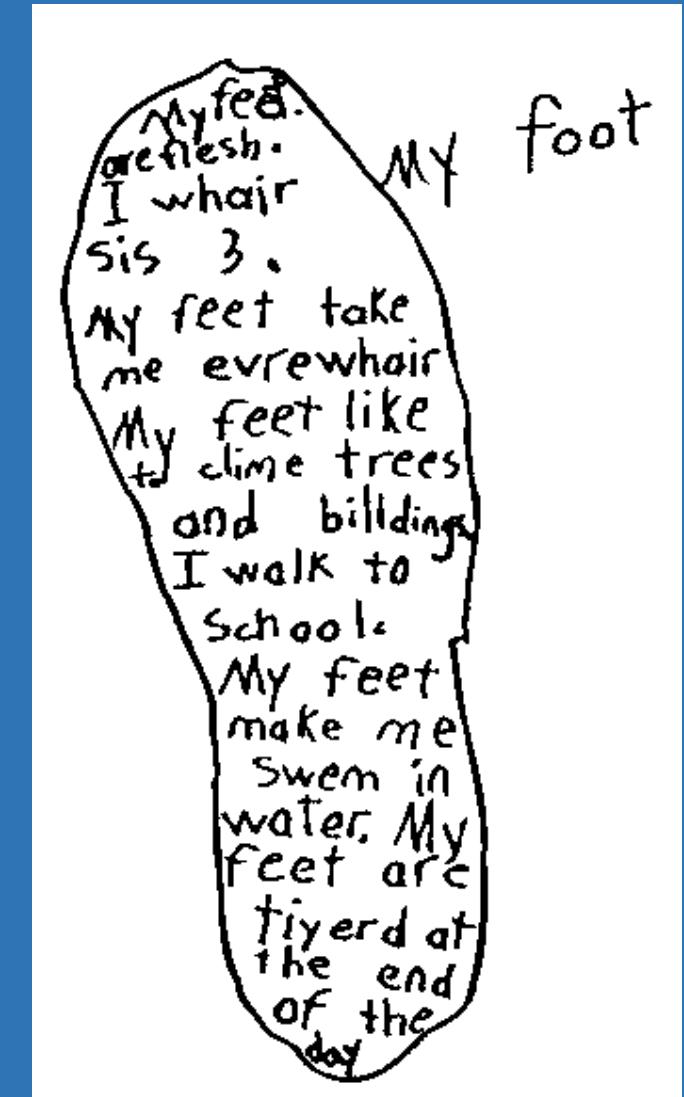
BILLDINGS for *buildings*

SWIM for *swim*

TIYRED for *tired*

PHASE 4

- All of the invented spellings are Logical English spellings
- Easy to read
- Some dialect influence



Self-Testing: How many sight words (brain words) should a child be able to read and spell automatically by the end of first grade?

Facts According to Science
(self-testing)

ANSWER: 300+ Brain Words

From a practical perspective, by the end of first grade children in a **modern science-based spelling book:**

Kids learn ten new words each week.

30 weeks in the academic year.

30 weeks x 10 words = 300+ words/brain words in long term memory.

**It requires explicit study
20 minutes a day.**



My Grandmom Fell.

My mom screamed so

low + my uncles and

my dad droped their here.

and Ran in the house.

When I look at her

I though she was dead.

but she wasn't. I was

reliefed. Theresa

Additional Evidence

Gene and I also began to investigate how spelling word study is a missing link to reading comprehension in grades 2 and beyond.

Cognitive science says spelling word study is essential for reading comprehension.

So why don't we follow the science for teaching spelling?





Here's why!

Many schools and published reading programs **STOPPED TEACHING SPELLING EXPLICITLY** over the last three decades due to the lingering Whole Language domination in Reading Education.

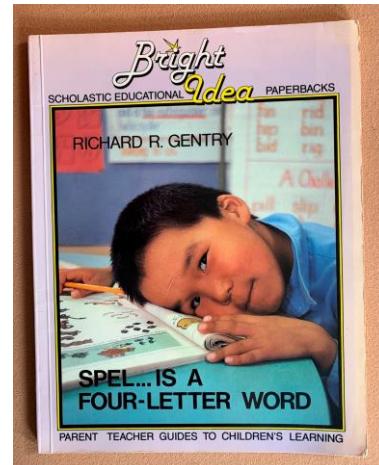
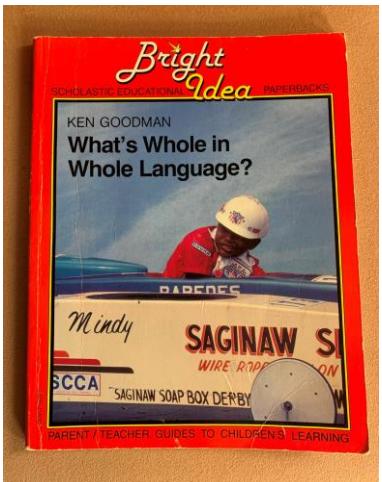
Our evidence that this is a problem comes from both

- 1) Cognitive Science and Neuroscience
- 2) Working with thousands of children and teachers in classrooms.



In the last three decades we've seen aspects of Whole Language Theory debunked by Cognitive Science and Neuroscience.

I can give you the history of WL because I'm was a part of it!

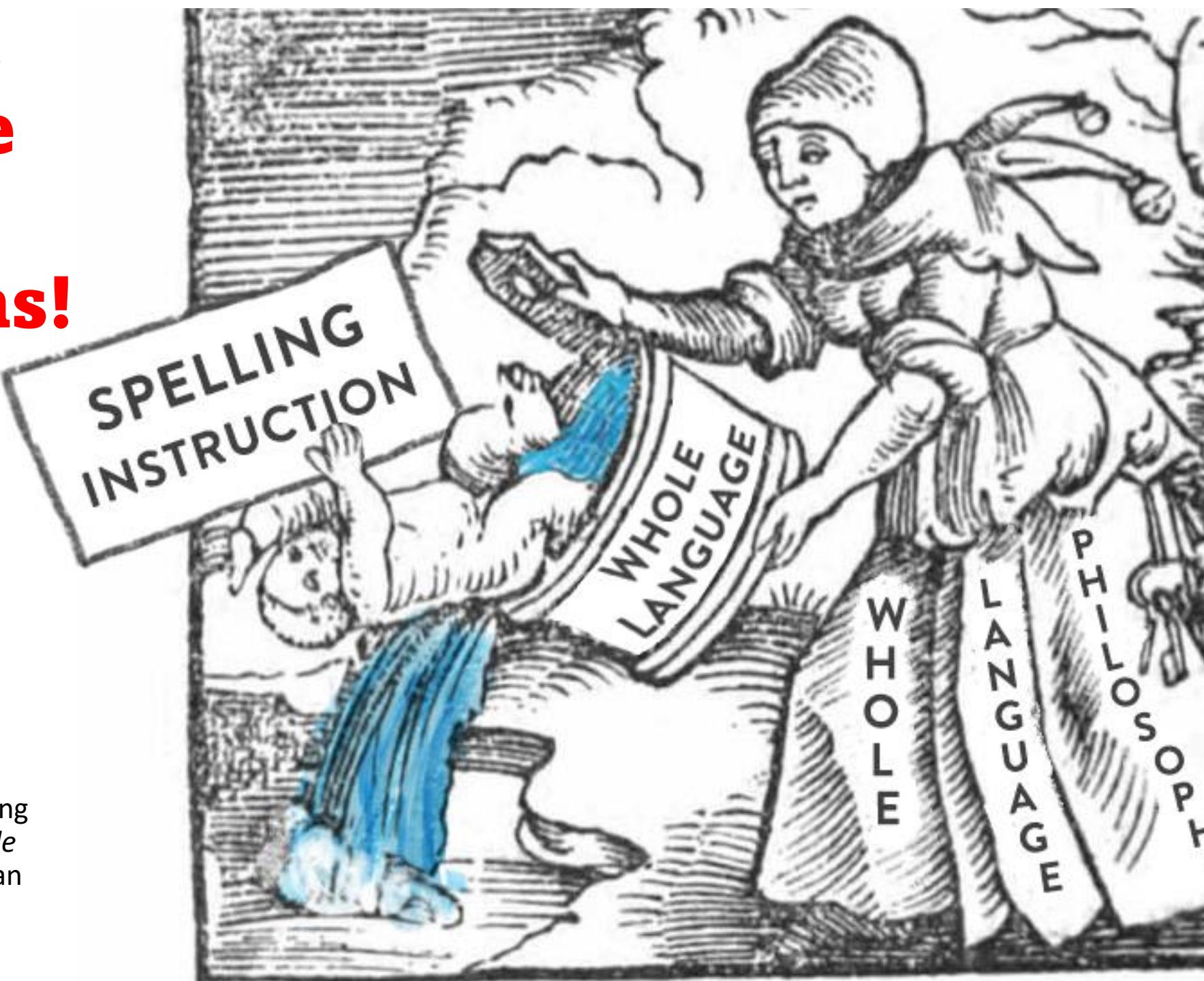


I studied with Ken and Yetta...

There were many WL Contributions!

- ✓ Respect for teachers
- ✓ Equity for children
- ✓ The call for good children's literature
- ✓ The writing process
- ✓ Support for early use of invented spelling

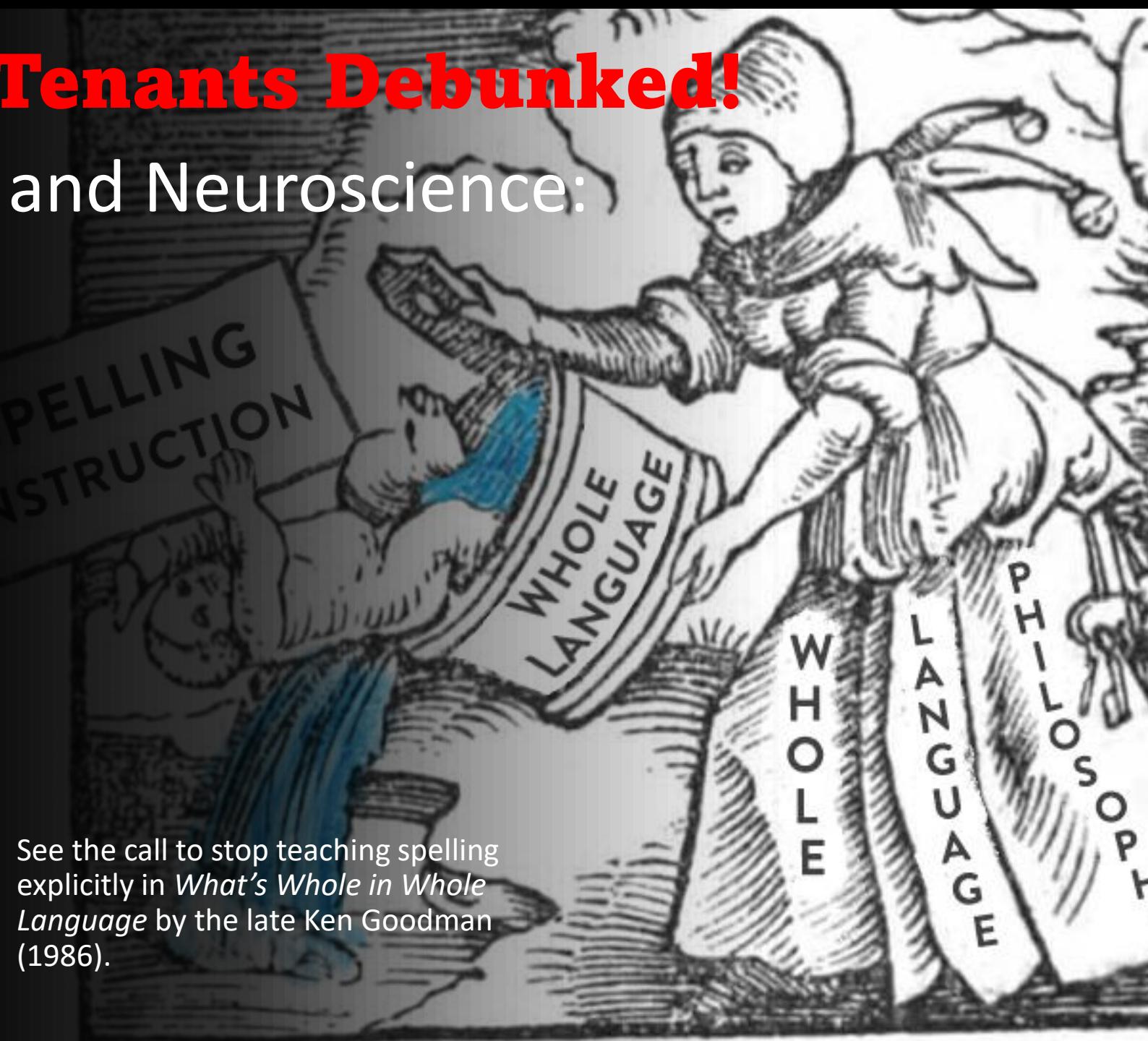
See the call to stop teaching spelling explicitly in *What's Whole in Whole Language* by the late Ken Goodman (1986).



Three Major WL Tenants Debunked!

by Cognitive Science and Neuroscience:

- 1) The very core of WL Theory is that learning to read is as easy as learning to speak.
- 2) The WL call for no spelling books
- 3) The WL call for no phonics— “No serial order of lexical units.”



See the call to stop teaching spelling explicitly in *What's Whole in Whole Language* by the late Ken Goodman (1986).

Let's consider **three things** that happened with the dominance of whole language.

1) We lost Spelling Instruction as an integrated word study curriculum.

Teachers were told: "We don't have time for spelling."

Often replaced with Test Prep



*The notion that technology makes
spelling obsolete.*

*Sum won tolled me eye wood knot
knead too learn two spell. Computers
dew it four us!*

Cognitive science says we need spelling
in the brain for reading comprehension.

What else did we get with whole language?

2) Haphazard Spelling Instruction

- “Hit or miss”
- No specific grade-by-grade curriculum
- Random or disorderly—teachers desperately choosing their own words
- Pulling words from the internet

What did we
get with whole
language?

Haphazard Spelling Instruction

- Spelling components of mammoth reading programs—**Too much stuff!**

Separate Lessons for the Components:

- ✓ Phonemic awareness
- ✓ Phonics
- ✓ Sight words
- ✓ Grammar
- ✓ Vocabulary
- ✓ Spelling

Haphazard whole language spelling included an almost three decades old program that's still popular today.

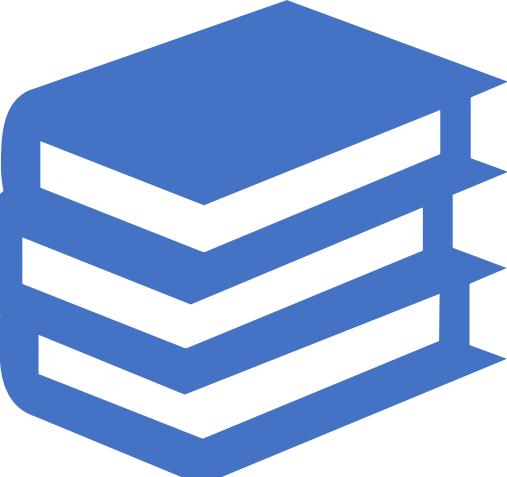
Words Their Way

Word Sorting alone and Hypothesis Testing

Children don't learn the complexities of English spelling by *discovering* how spelling works through playing games and word sorting alone: That's *minimal* guidance.

These whole language and constructivists theories for teaching spelling have been debunked by cognitive science.

What else does
whole
language and
minimal guidance
for teaching
spelling
look like today?



3. In one popular
so called “reading
workshop”
program (HMH
Into Reading the
spelling
component is
Syllable Word
Sorting.

The reading program has
teachers leading a syllable
sort on Monday with an
optional posttest on
Friday. Teachers are
expected to figure out
what else to do with
spelling on their own.

I've written that this
program has the worst
spelling component in a
reading program I've seen
in my 40+ year career.

That program must be
supplemented with
explicit, systematic
spelling instruction.

Key Point: many mammoth WL reading programs offer **minimal guidance** with spelling instruction as opposed to **explicit instruction.**



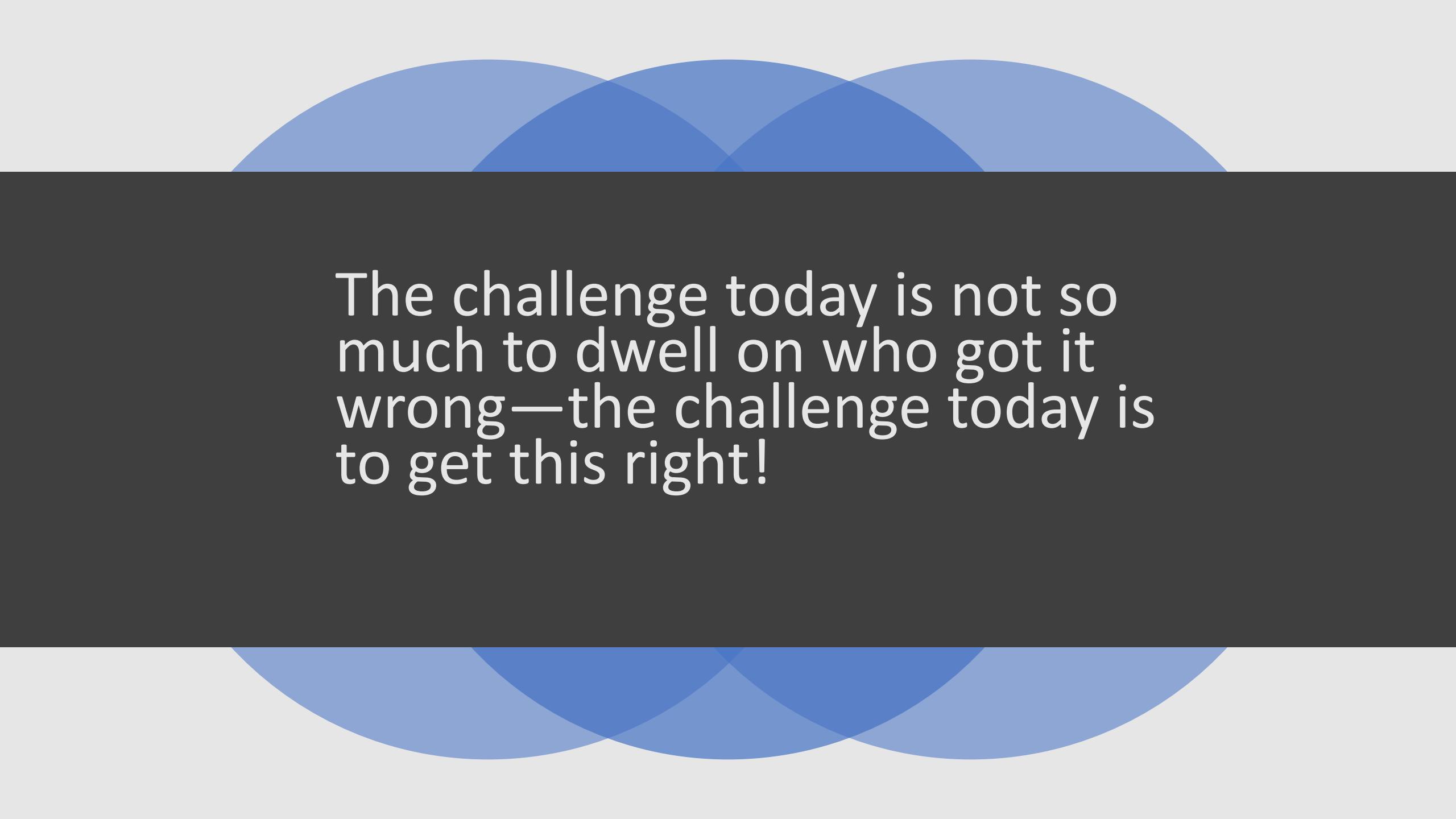


I'm speaking out today.

I believe cognitive science works.
I believe honesty works.
And I believe common sense works.

Something is wrong when so many
end of first graders can't read.

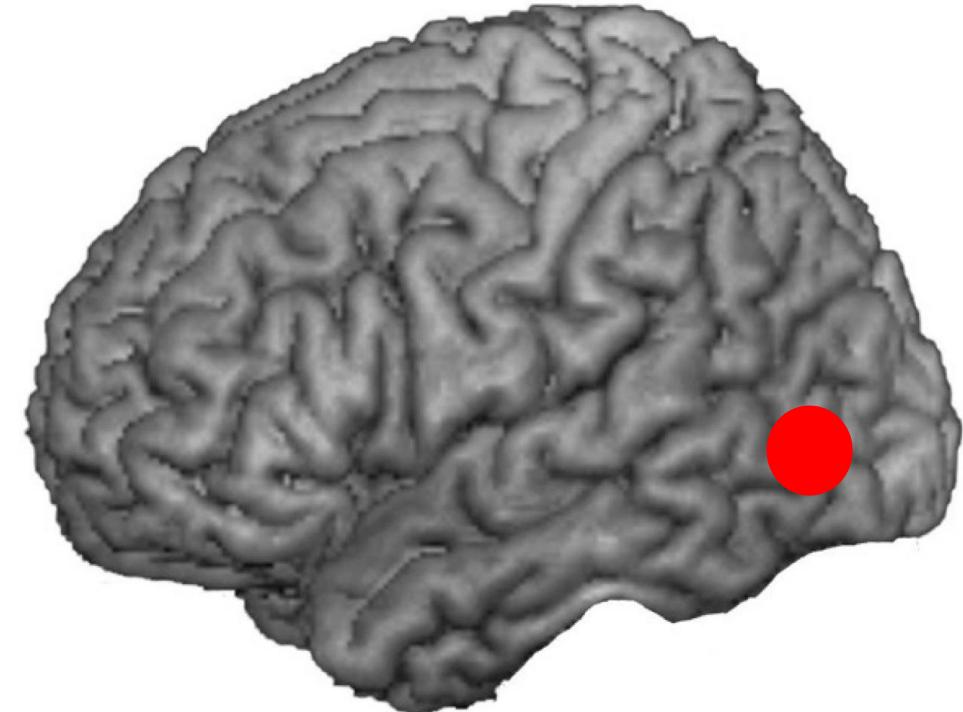
Something is wrong when 60 % of
fourth graders in America read
below grade level.



The challenge today is not so
much to dwell on who got it
wrong—the challenge today is
to get this right!

How do YOU use Brain Words?

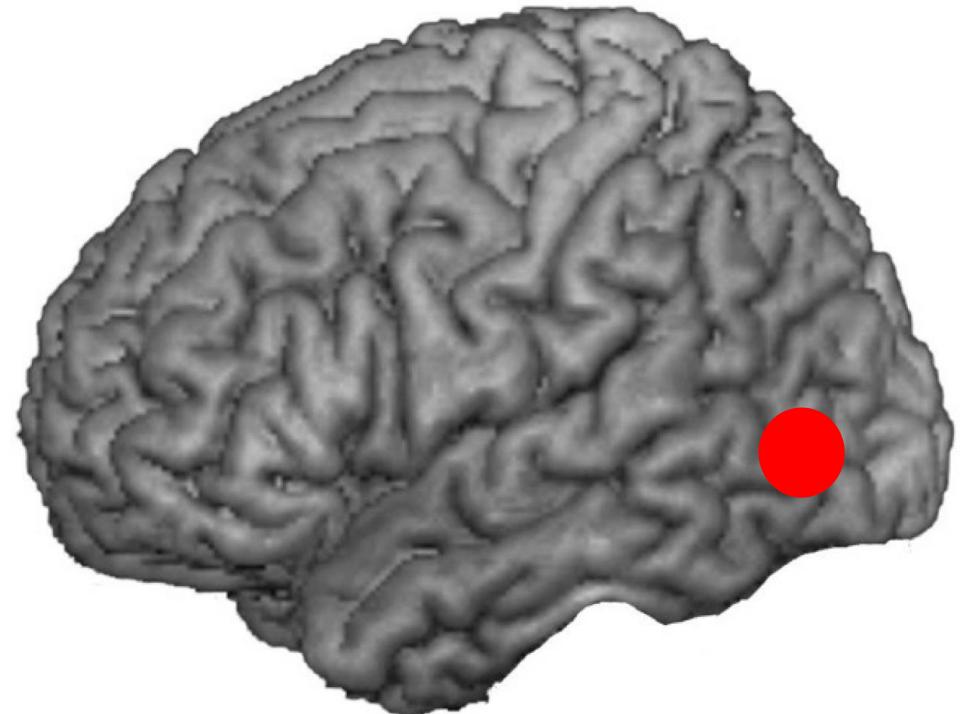
Brain word activity
with your own
reading brain



Are you ready?

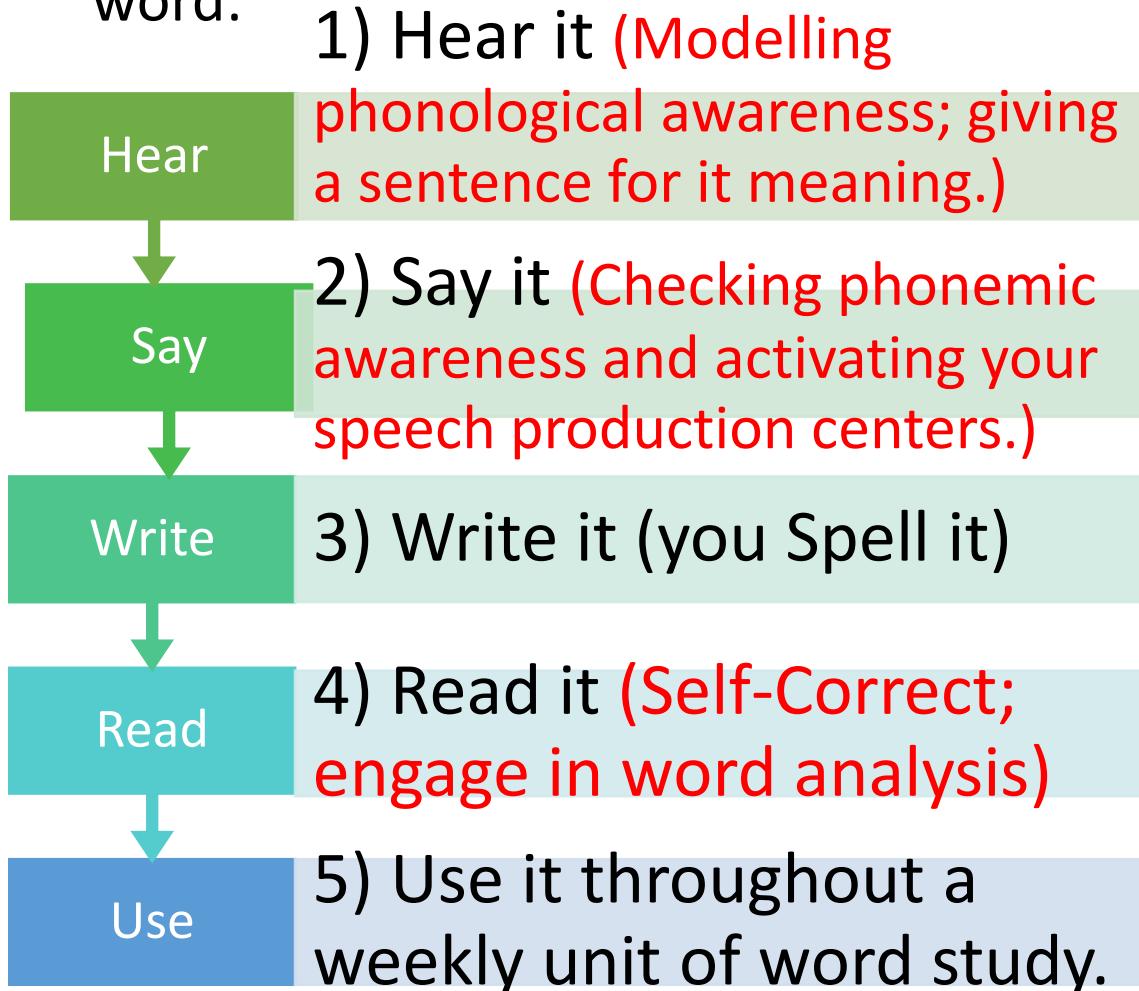
Take out a pad and pencil. I'm going to teach you a new vocabulary word, some phonics, and a spelling-for-reading technique!

You can take this
science-based
spelling
pretest
strategy back
to your
classrooms
tomorrow!



Five- Step Science- Based Spelling Pretest

This is science-based spelling pretest. I'm going to give you three words. For each word:



Think about what you know about each word's sound, pronunciation, spelling, and meaning in your own spoken language system.

Here's your first word.

- 1) Hear it
- 2) Say it
- 3) Write it (Spell it)





4) Read It and Self-Correct.

dog

5) Use it for reading and text composing. The goal of spelling instruction is a **brain word** you can read and write automatically.

Here are spelling word study activities to use in the kindergarten phases.

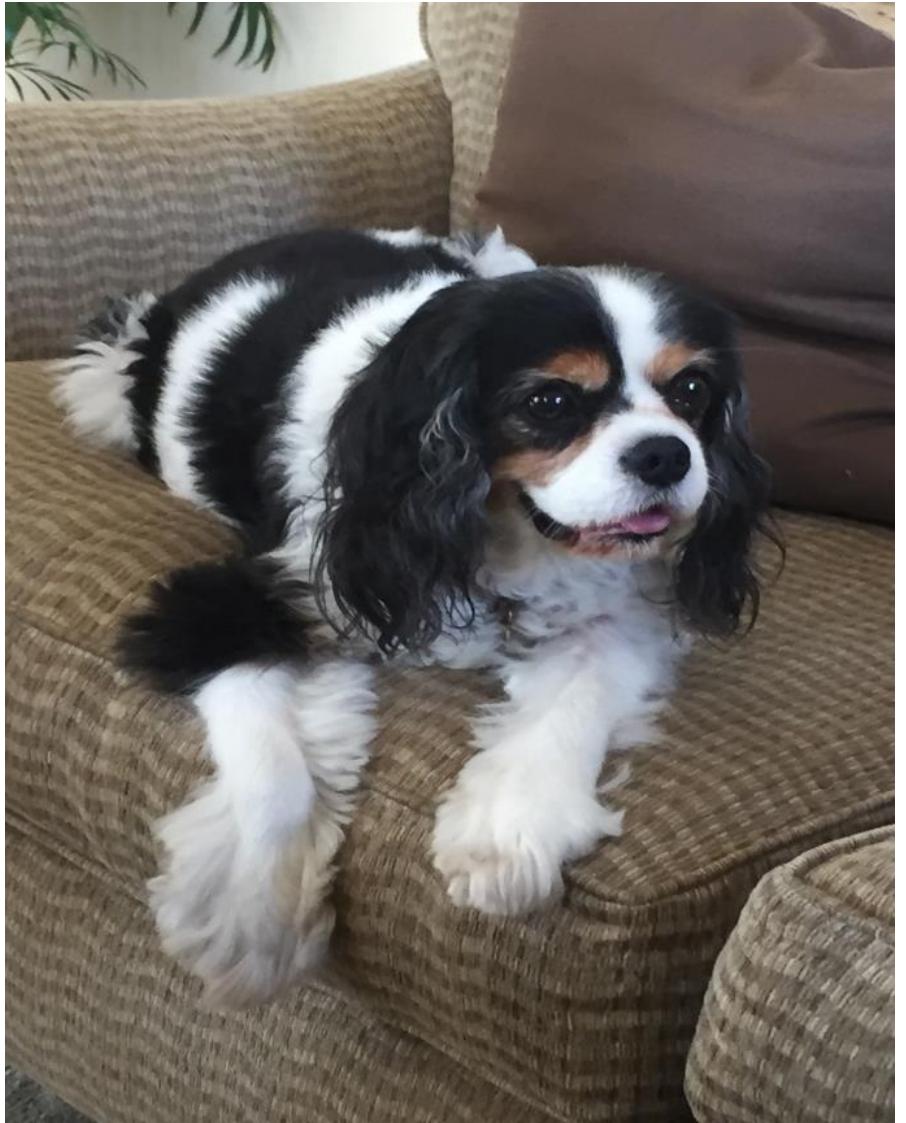
Spelling Word Study includes developing **Phonological Awareness**.

Finger Spelling

Spelling Word Study reinforces **Phonics**.

We might **use Elkonin Boxes** and map the sound to the letters.

d | o | g



Next word.

1) Hear it

This is a King Charles
_____ spaniel.

2) Say it

3) Write it (spell it)

Now you 4) Read it and check your
spelling

4) Read It and Self-Correct.

cavalier

5) Use it for reading and text composing. The goal of spelling instruction is a **brain word** you can read and write automatically.



Spelling Word Study

Integrated Spelling Word Study includes developing
Phonological Awareness.

Syllable Chin Drop

kæv ə'lɪər

Spelling Word Study reinforces **Phonics.**

cav-a-lier =

[closed syllable—schwa—vowel team spelling]

Spelling Word Study

Integrated Spelling Word Study includes developing
Vocabulary & Meaning.

Noun

- a small spaniel
- a horseman, especially a mounted soldier



Adjective

- haughty, disdainful: *an arrogant and cavalier attitude toward others*
- offhand or unceremonious: *The very dignified officials were confused by his cavalier manner.*

Here's your last word.

She was the _____ of educational professionalism."

- 1) Hear it, 2) Say it, 3) Write it (Spell it)



quintessence

quint + essence

4) Read It
and Self-
Correct.

quint + essence



Spelling Word Study includes:

Morphology, the study of meaningful word parts. (Root Words such as Greek and Latin and Base Words: stand on their own)

Did you think of the **quint** as in quintuplets?

Did you think of the base word **essence**?

It comes from French, Latin, and Greek and means the fifth essence or pure essence.
(water, earth, fire, air + essence)



quintessence

Meaning

- .
- .
- .

the most perfect or typical example of a quality or class.

The quintessence of brain word power is...

1) If you can spell the word

and

2) if you already have its meaning in your spoken language system, then

3) you will be able to read and comprehend the word even when you see it in isolation and also retrieve the spelling to create meaning in writing.

Building Brain Words

The story of building brain words comes in two parts.

Part 1—Spelling to Read Methodology from
No Reading to End-of-First Grade

Part 2—Spelling to Read Methodology from
Grade 2 and Beyond

Every teacher should understand how the reading brain develops in kindergarten and first grade.

It impacts everything that happens in Grade 2 and beyond!

We'll take a close look at how **the brain changes** from preschool to end of grade 1 and grade 2

Five Developmental Phases!



tuth Fare
wn hit I wsh mi
BED AND the tuth
Fare cam.



(Based on two independent lines of research from Linnea Ehri in automatic word reading and Richard Gentry in developmental spelling)

Outcomes of Brain Development

Using invented spelling analysis tells us how the Reading Circuitry is developing!

Phase 0—**Non-alphabetic Spelling** (no alphabetic letters present)

Phase 1—**Pre-alphabetic Spelling** (letters but no sounds)

Phase 2—**Partial Alphabetic Spelling**

Phase 3—**Full Alphabetic Spelling**

Phase 4—**Consolidated/Automatic Alphabetic Spelling**

Preschool

0



1



Kindergarten

2

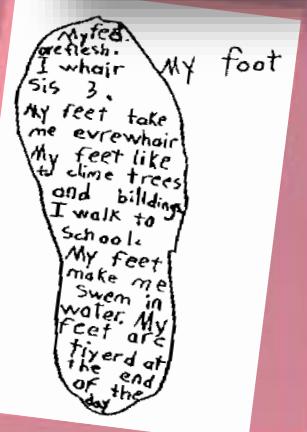


Grade 1

3

tuth Fare
wn hit I wsh mi
bed and the tuth
Fare cam.

4



Five Phases of Writing, Spelling and Reading

Phase 0 : Non-alphabetic spelling [No Letter Use]

No later than Preschool

- Wavy writing and loopy writing-scribbling
- Child cannot write his or her name

Example:



Phase 1

Pre-Alphabetic Spelling

Expected no later than the
first half of kindergarten

Example



Phase 2

Phase 2: Partial Alphabetic Spelling

Expected in second half of
kindergarten

- HMT for Humpty
- DPD for Dumpty

Example:



Phase 3

Phase 3: Full Alphabetic Spelling

No later than the first half of First Grade

- CAM for Came
- NIT for Night
- Child writes a letter for each of the sounds

Example:

tut h F a r e
w n h i t I w s h m i
b e d a n d the t u t h
F a r e c a m .

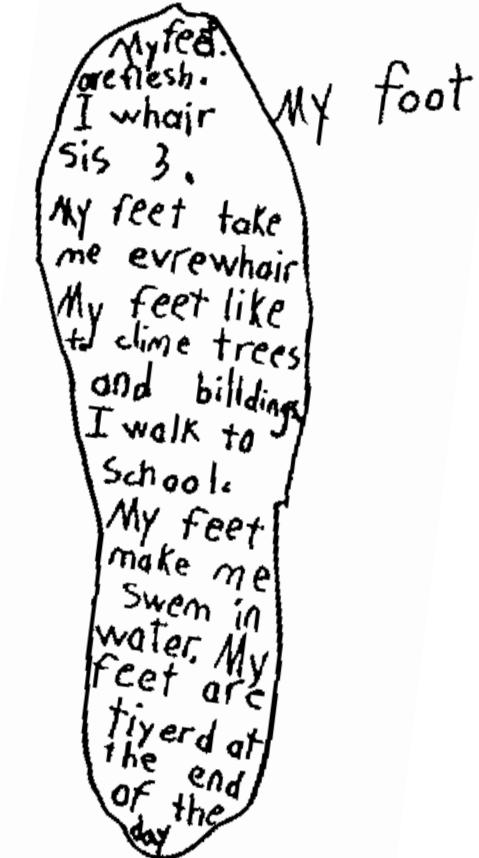
Phase 4

Phase 4: Consolidated/Automatic Alphabetic Spelling

in Chunks of brain words and
syllable patterns

No later than the end of
First Grade

- EVREWHAIR for Everywhere
- Child writes EV then RE in a chunk
- Child analogizes with AIR and writes WHAIR
- Child consolidates the sounds into chunks
of spelling patterns



Phase 4—Consolidated/Automatic Phase

For most kids learning to read (and write) in English starts out being slow and laborious in the first half of first grade. Then all of a sudden after the December holidays, “the lights come on!”

Phase 4 is when “the lights come on” in the reading brain.



Decoding/Encoding the Word *interesting*

Decoding/encoding *interesting* in
Phase 3 uses a lot of working memory—slow and laborious.

•i n t (ə) r ə s t I NG
1 2 3 4 5 6 7 8 9 10 11 graphophonic
units]

Decoding/encoding the *interesting* in
Phase 4 is when kids can do it automatically in chunks.

•in·ter·est·ing [consolidated into 4 units]

This reduces memory load and enables comprehension.

The Power of Chunking in Phase 4

What happens in your brain when you see this word?

SEIKOOCDNAMAERCECI



ICECREAMANDCOOKIES

Word Study
should include the
Six Syllable Types.
They are **Chunking**
Patterns.

The brain learns to recognize six
syllable types!

What are they?

Open syllables (V, Cv, CCv): (**me, she, he** and **no, so, go, to-tal, ri-val, Bi-ble, mo-tor, me-te-o-rol-o-gy**)

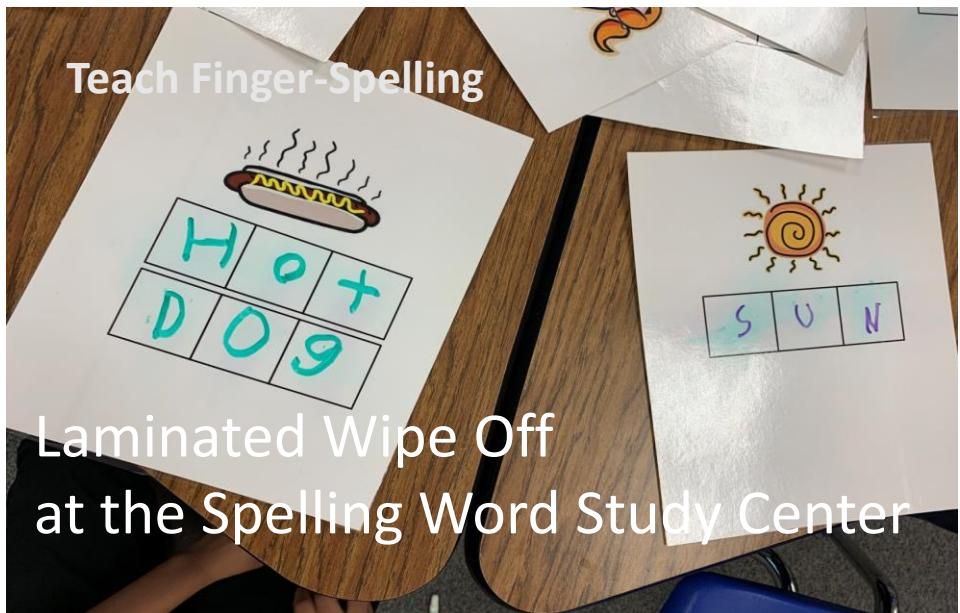
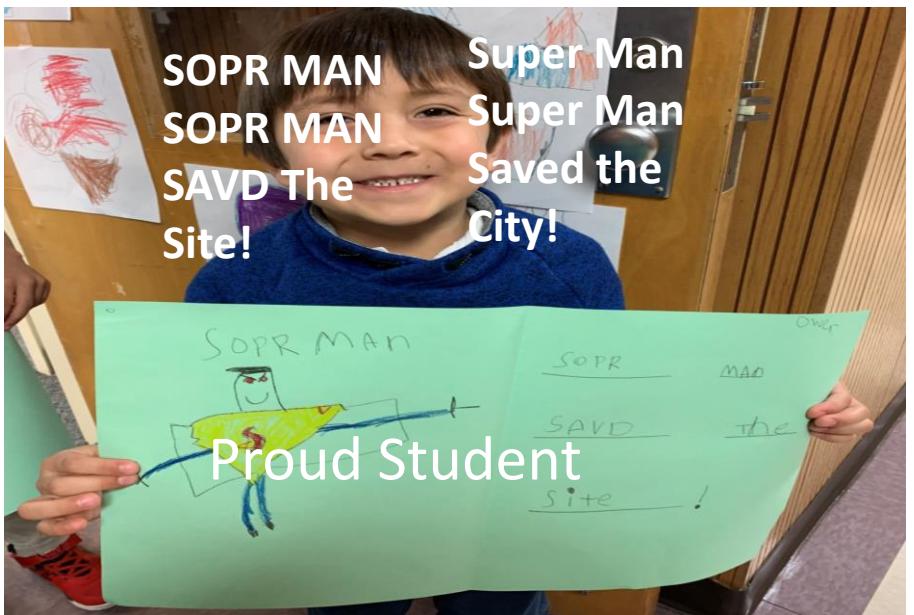
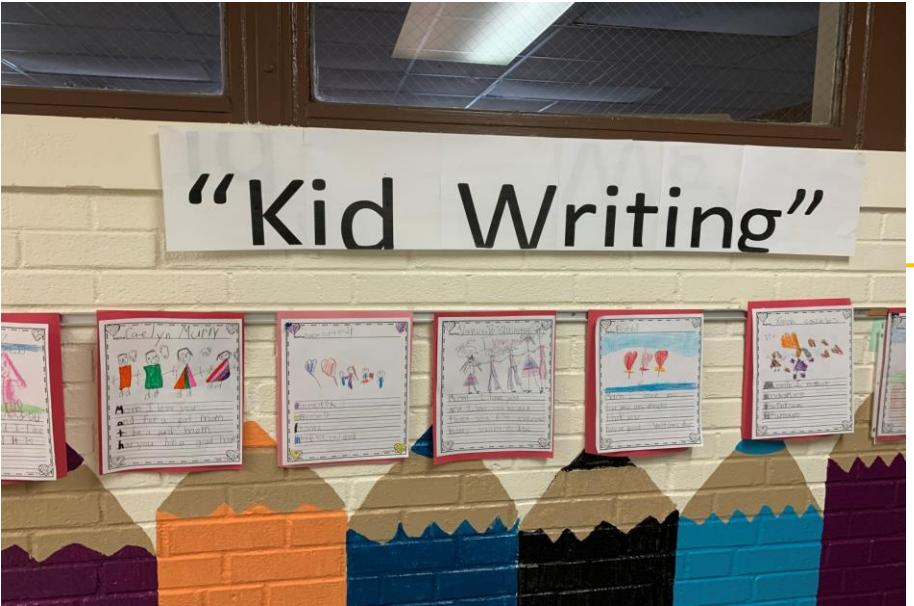
Closed syllables (CvC) (about 50% in running text): (**com-mon, but-ter, stuff, in-com-pre-hen-si-ble**)

Vowel-Consonant-e (VCe) syllables: (**make, while, yoke, rude, ape, op-er-ate**)
(Called “e-marker” or “silent e”)

Vowel team syllables (may be two, three, or four letters): (**thief, boil, hay, boat, straw, hey, boy, taugh, bough, night, counsel**) and can represent a long, short, or diphthong vowel sounds.

Vowel-r syllables (vowel followed by r (er, ir, ur, ar, or): numerous, hard to master; they require continuous review: (**fir, fur, for, perform, ardor, mirror, further, wart, in-form**)

Consonant-le (C-le) syllables (*stable final syllable*, C-le combinations)
(There is no doubled consonant. It is combined with a closed syllable.):
(**circle, puzzle, riddle, quadruple**)

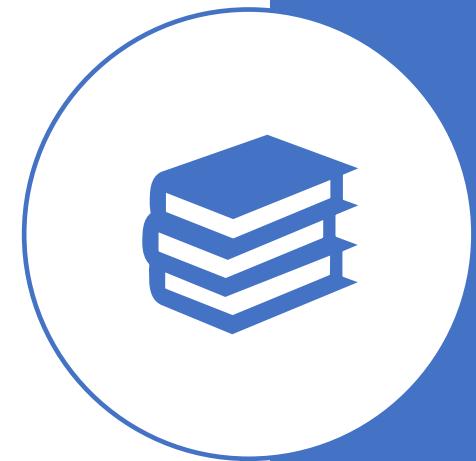


What about building brain words in Grade 2 and beyond?

The science of reading indicates:

A call for change! A major
change needed is

Comprehensive, integrated,
explicit, systematic, intensive,
spelling instruction!





What does work?

What **Word Study** works?

Using spelling instruction as a word study curriculum!

Teach Spelling Explicitly
20 minutes per day
in a
standalone grade-by-grade curriculum—Explicit, systematic, standalone spelling instruction is strongly supported by research.

Characteristics of Effective Spelling Instruction

Randall R. Wallace, Ph.D. Missouri State University

Reading Horizons, 2006, 46 (4)

along with Gentry & Ouellette, Moats, and many others.



Moats doesn't shy away from explicit spelling instruction:

*"As a general guide for covering the proposed content, **about 15-20 minutes daily** or 30 minutes three times per week should be allocated to spelling instruction. Application in writing should be varied and continual."* (Moats, 2005/2006, p. 42-43)



What Word
Study works for
spelling?

A Leveled Grade-by-Grade Curriculum

Teach the Right Words at the Right Time!

Most state standards call for a **Grade-by-Grade** Spelling Curriculum.

What a Grade 3 Curriculum Looks Like

- Note **specificity** of these Brain Words weekly lessons.
- This builds Word Level Proficiency.



UNIT 13 Digraphs, Blends..... stretch brook	70a
UNIT 14 Complex Consonants: Soft g, Soft c	76a
pencil ice large	
UNIT 15 The Schwa Sound.....	82a
clover animal awake afraid ever	
UNIT 16 Final Stable Syllable: -le	88a
simple beetle purple ankle	
UNIT 17 /ô/: aw, o	94a
cost dawn	
UNIT 18 Review.....	100a
UNIT 19 r-Controlled Vowel /ôr/: or, ore, ar, oar	104a
thorn, warm roar	
UNIT 20 r-Controlled Vowel /ûr/: ur, ear, ir	110a
return, firm	
UNIT 21 r-Controlled Vowel /âr/: air, ear, are, ere, eir	116a
fair bare	
UNIT 22 Homophones.....	122a
cent grate	
UNIT 23 Compound Words.....	128a
nobody himself sunshine rainbow	
UNIT 24 Review	134a

Six Syllable Types
Spelling Connections highlights the six syllable types within and across grade levels to teach students six reliable syllable patterns. Color-coded example words above identify the syllable types within each unit.

Open Closed VCe Vowel Team Vowel-r Consonant-le



There are Five Best Learning Strategies According to Psychological Science.

- 1) self-testing, 2) self-explanation,**
- 3) elaborative interrogation, 4) distributed practice, and 5) interleaved practice.**

“Improving Students’ Learning With Effective Learning Techniques: Promising Directions From Cognitive and Educational Psychology”

Psychological Science in the Public Interest 14(1) 4–58 © The Author(s) 2013

1. Self-Testing—Self Check

Self-Test in every weekly unit (except review units).

1. Self-Testing. Self-testing or taking [practice tests](#) over to-be-learned material. E.g. **Self-Testing** is the **Pretest** in a **Pretest/Studу/Post Test Methodology** for weekly word study

2. Teach a few spelling rules!

“HOW DO YOU KNOW?” You learn the rule!

A Spelling rule for Grade 3:

If a word ends in a **consonant followed y**, the y changes to i to add any suffix **except –ing**: carry, carried; carries, but carrying.

If a word ends in a **vowel followed by y**, the **base word is unchanged**: delay, delayed, delays, delaying (Gentry, 2022, Unit 32, page T178a).

Self-explanation is when the student can state the rule.

3. Teach WHY *great* and *grate* are spelled differently.

Third graders learn both spellings and meanings of single-syllable homophones in a lesson on words such as *roll* and *role*, *scent* and *cent*, and *great* and *grate*. (Gentry, 2016, Unit 23, page T152A.)

Elaborative Interrogation is when students can explain “why.”

Teach Morphology and Vocabulary

Root Words: the primary meaning part
Latin root **cycl** in *cycle, bicycle, cyclone,*

Base Words: stand on their own—may receive **prefixes, suffixes**, or be **compound words, contractions**

Begins in K-1 and intensifies up through the grades:

(e.g., Study of Greek and Latin forms such as L. root **jud**
judge, adjudicate, injudicious, judicial, misjudge, prejudice, and many more.)

4. Interleaved Practice

Mix up the practice for long-term effects.

- A Look-Say-See-Write-Check “Flip Folder” technique
- Digital practice options for in school or home practice
- Meaningful workbook pages
- Online spelling practice
- Word sorting options



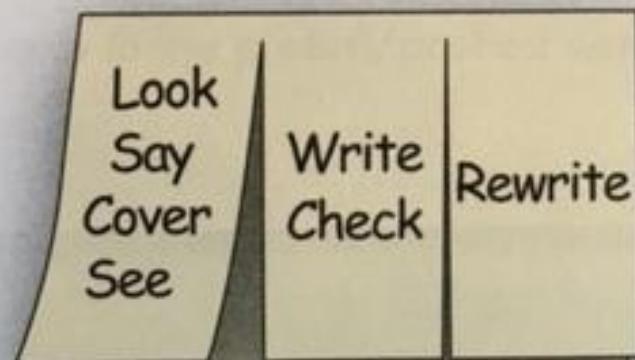
Flip Folder Study Technique

E.g. Using the Flip
Folder for
Distributed Practice

This research-proven study technique provides a systematic way for students to learn the correct spelling of words using a combination of visual, auditory, kinesthetic, and tactile procedures. The activity provides immediate feedback—vital for correcting mistakes and retaining correct spellings.

Making and Using the Flip Folder

- Cut three flaps in a manila folder and label the flaps as shown below.



5. Distributed Practice

Break up the practice into short sessions throughout the week

- 20 minutes per day (Moats, 2005/06).
- Students leave it and come back to it day after day—but only for a short time.

These word study strategies result in TRANSFER (Brain Words) not simple short term memorization.



Pause and Ponder

1. Are 90% of your first graders entering second grade with 300+ brain words?

2. Do 90% of your fourth graders spell and read on grade level?
3. Are you spending about 20 minutes per day on integrated spelling word study?
4. Is your school and district teaching spelling explicitly and systematically in a grade-by-grade curriculum?
5. Is your school or district explicitly teaching manuscript handwriting beginning in kindergarten and cursive beginning in second grade?



Welcome to Overcoming Dyslexia: the # 1 Reading Disability

How I became an expert on dyslexia:



“In when I was a sophomore ...”

**Let's begin with Facts from
Neuroscience and
Cognitive Psychology**

5 Important Questions and Answers about Dyslexia



This is little self test to find out what you know and what you might not know.

- 1) How many kids in your school are dyslexic?
 - A. 1 in 5
 - B. 2 in 100
- 2) Are more boys dyslexic than girls?
- 3) Does dyslexia run in families?
- 4) Which statement is true?
 - A. Many dyslexics end up in prison.
 - B. Many dyslexics are successful in life.
- 5) Can dyslexia be cured?

*Dyslexia is a specific 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**.*

Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

--International Dyslexia Association (IDA)

Dyslexia is brain-based but its cause generally has nothing to do with intelligence.

[A brilliant person can be dyslexic and a not so brilliant person can be dyslexic!]

Simply put, kids who are dyslexic most often have **trouble learning to decode print and to spell (encode)**.

Dyslexia is **generally not considered a comprehension disorder**; however, if one can't read words, one can't comprehend.

How many kids in your school are dyslexic?

- A. 1 in 5
- B. 2 in 100

Nobody knows. Recent studies suggest that 1 in 5 people have neurologically-based processing difficulty for learning to read. Brain scientists are often saying about 10%.

Part of the difficulty in determining the incidence of dyslexia is that dyslexia manifests itself across a continuum: some cases are mild, others severe.

Likely that all teachers work with students who are dyslexic.

Yes. It has a genetic origin. It's biologically and neurologically based so familial occurrence is not surprising.

If you are dyslexic, it's likely that half of your brothers and sisters are too.

If you are dyslexia it's about a 50% chance that one of your parents is dyslexic.

It sometimes skips a generation.

Yes. Recent studies debunk a popular myth that the numbers are equal. The latest science reports that dyslexia is more common boys.

What about the prison question?

- 4) Which statement is true?
- A. Many dyslexics end up in prison.
 - B. Many dyslexics are successful in life.



5. Can dyslexia be cured?

No—it's genetic.

However, both genetic and environmental factors play a role.

Early intervention is a major goal.

We can help all kids overcome dyslexia.

Let's think about symptoms.

It's important to know the classic symptoms.

HOWEVER

Recognize that the **symptoms you see are not a diagnosis.**

Refer to a medical specialist or trained psychologist.

Educators are not equipped to diagnose neurological processing disorders.

Classic Early Warning Signs in Early Childhood (Symptoms)

Speech delay—Language isn't occurring as it should. Receptive language is fine. Expressive language is delayed.

Saying sounds in the wrong sequence—Odd pronunciations P-sketetti, am-i-nal, em-iny, a-lu-ni-mum

Word retrieval Trouble finding the word they want to use—"You know, that thingy."

Trouble with rhyming words

Trouble with phonemic awareness

Trouble with invented spelling

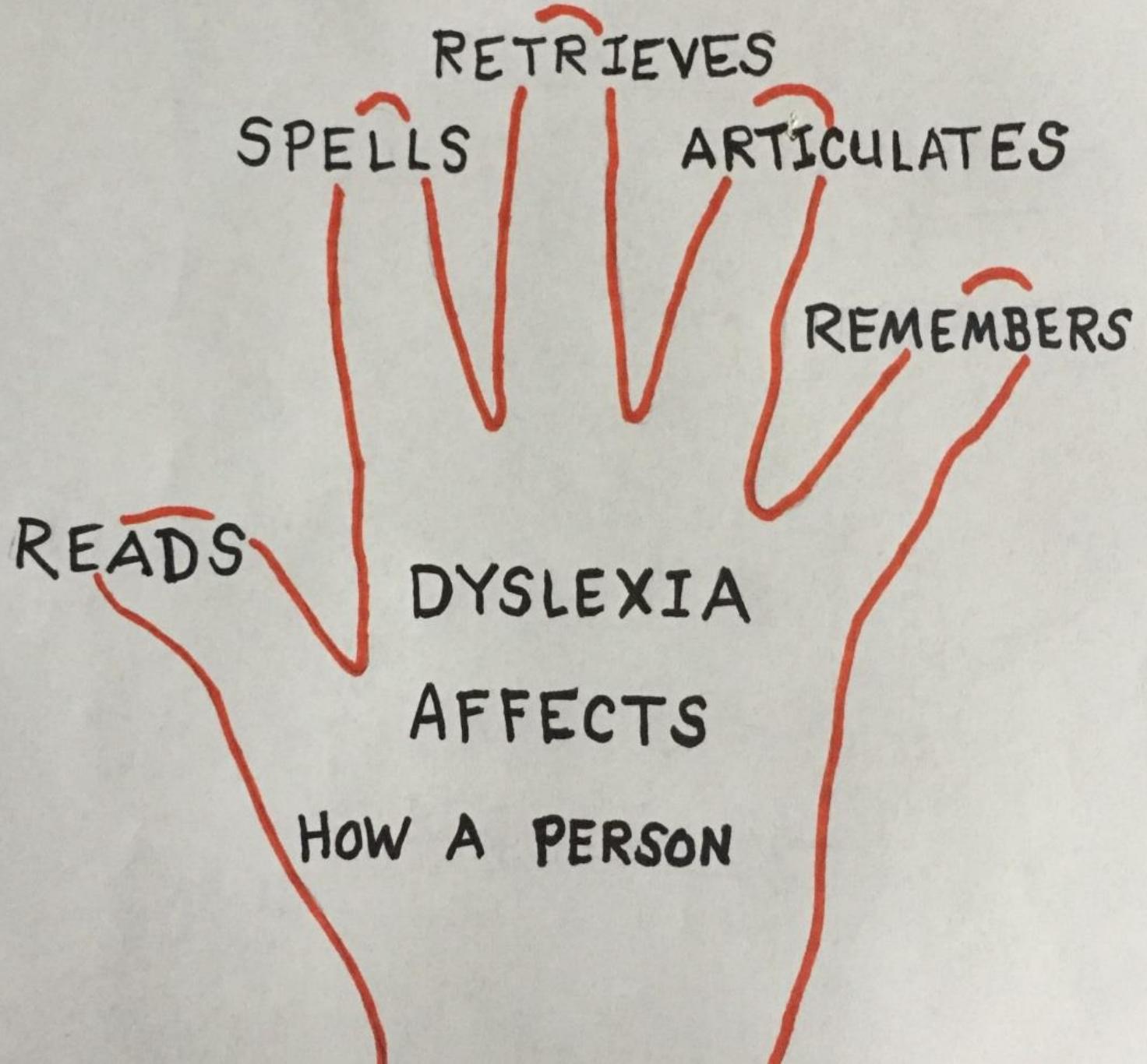
A history with family members with reading problems

- Adapted from Susan Barton <https://bartonreading.com/the-barton-system-is/>

Classic Elementary School (Symptoms)

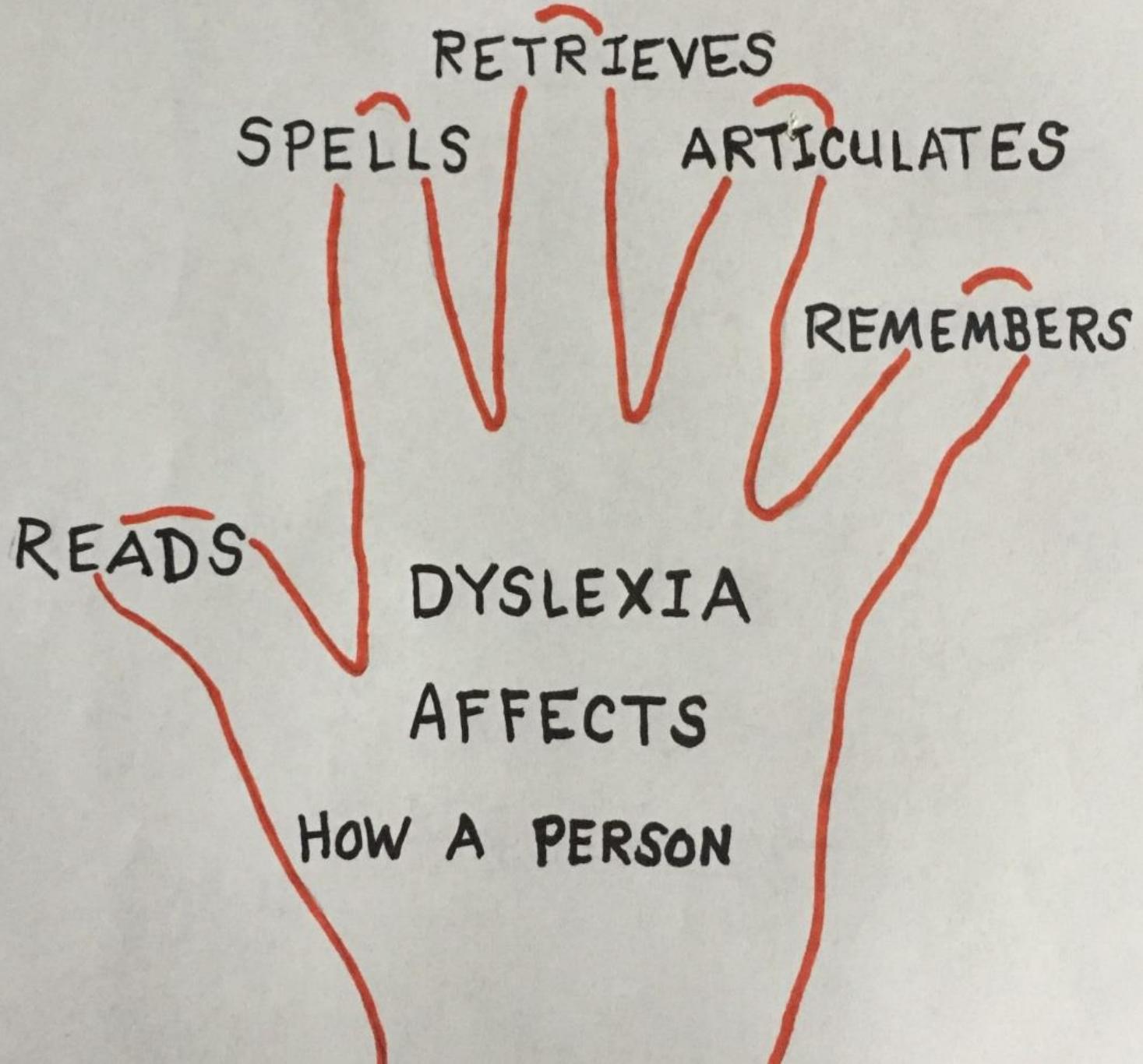
- Difficulty memorizing arbitrary sequences: days of the week, months of the year,
- Spelling their own name
- Learning their address
- Learning their phone #
- Learning *names* of the letters
- Learning the *sounds* of the letters
- Multiplication tables
- How to tie shoes (Age 6 or 7 or later)
- Issues with dominance—right handed or left handed [Normal—4 years old— Dyslexic—7, 8, 9 years old—Dyslexic—mixed dominance]
- Difficulty with written expression
- Slow reading rate
- Poor handwriting skills
- Poor test taking skills
- Terrible spelling
- Difficulty reading musical notes from a score

5 Ways Dyslexia Affects a Person

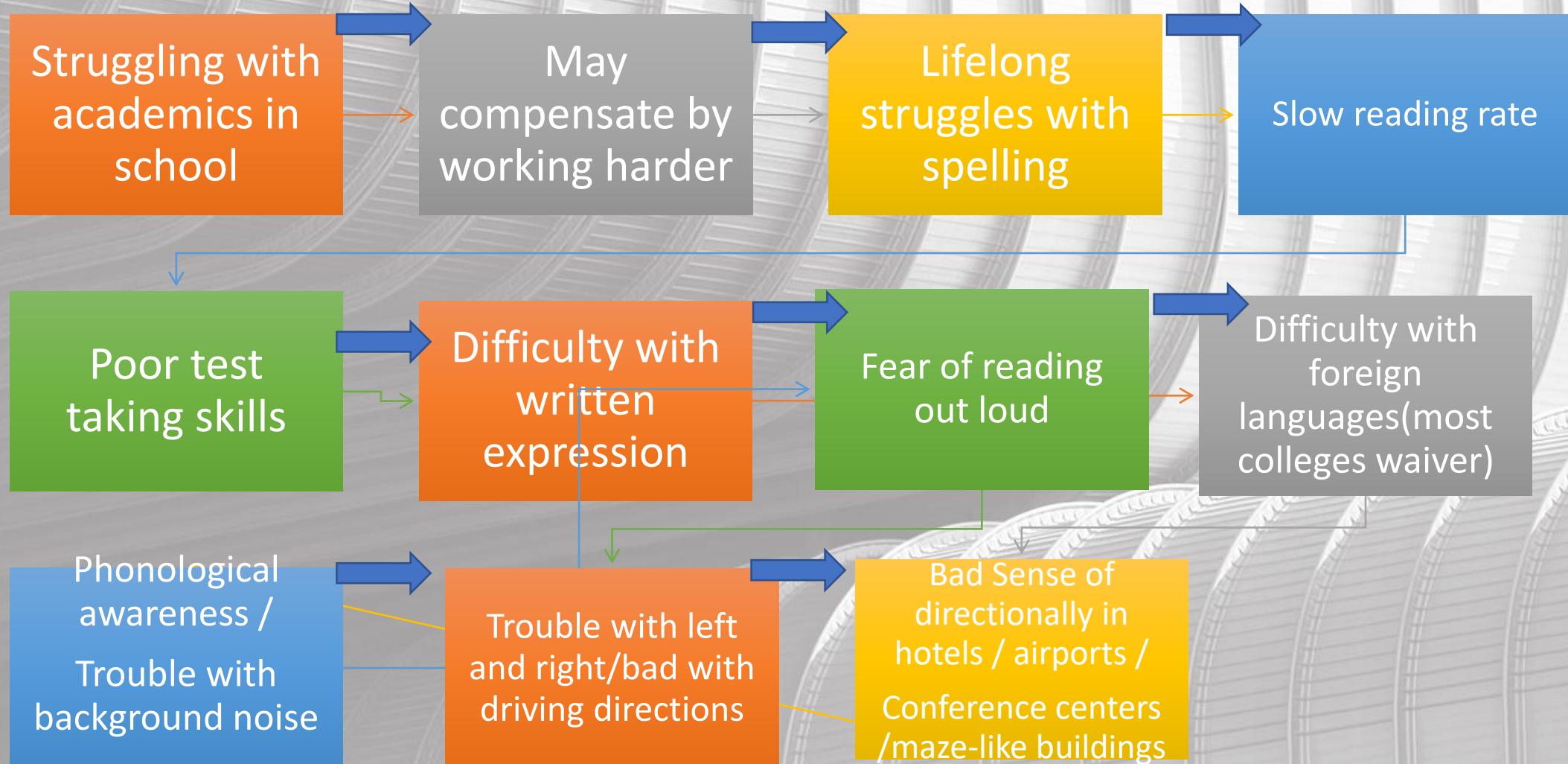


I have daily dyslexic deficit experiences:

- * A slow reading rate
- * Poor spelling
- * Challenges with word retrieval when I'm under the gun
- * Embarrassing pronunciations



Classic Warning Signs for Me!



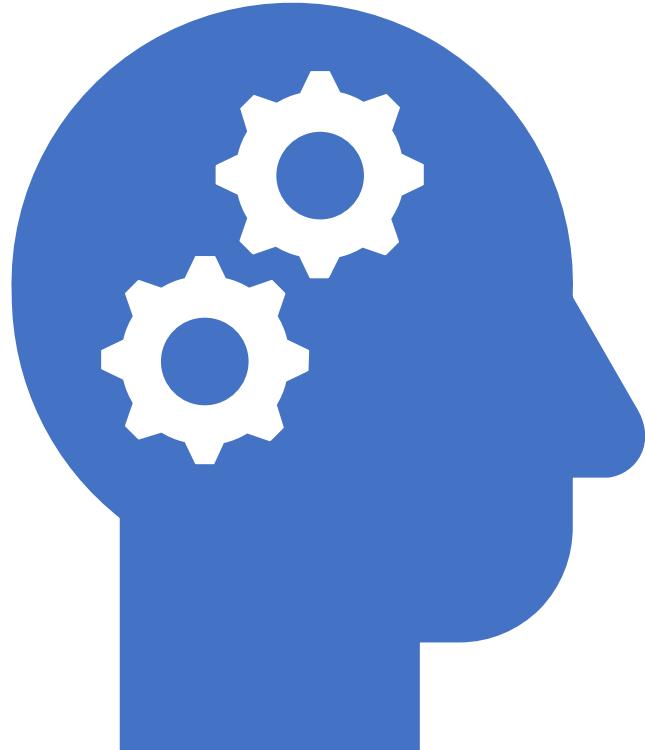
It's not unusual that some people who are dyslexic like myself become experts in the area of their disability.



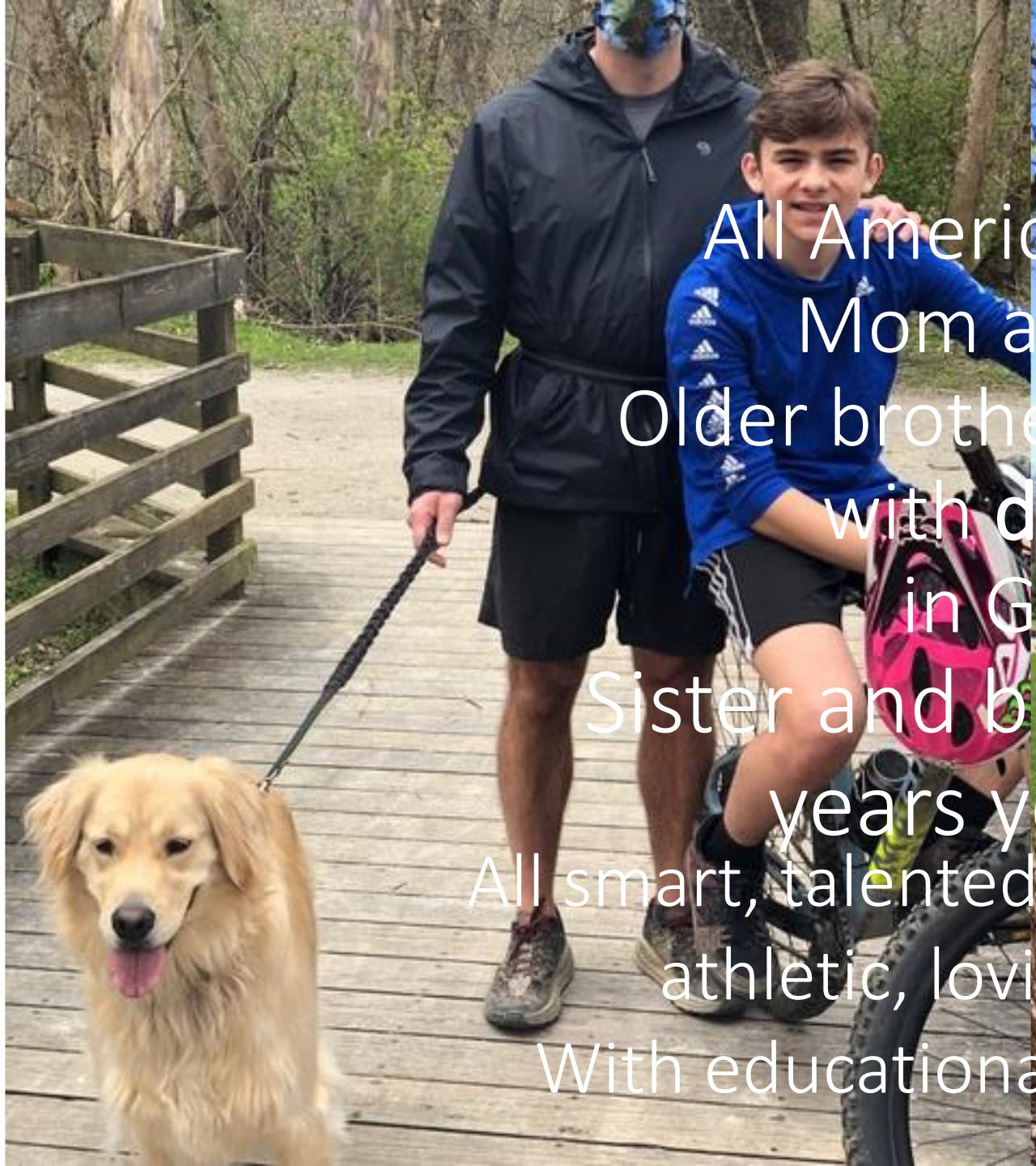
I attribute dyslexia to helping me become a leading authority on spelling and dyslexia, and a 40+ year researcher and supporter of spelling books.

Without dyslexia I probably would never have co-authored the *Brain Words* book or have more than a million readers on a *Psychology Today* education blog.

How can schools help children with dyslexia?



- Intervene early.
- Teach phonics linked to phonemic awareness.
- Teach spelling explicitly. Spelling and brain words ignite the reading brain.
- Teach writing. Begin teaching writing in preschool and kindergarten.
- Teach handwriting including manuscript for beginners and cursive beginning in second grade. Handwriting is a proven language learning skill.
- Embrace repetition because the brain loves repetition for almost every skill.
- Don't ever give up on children with dyslexia.



All American Family
Mom and Dad
Older brother diagnosed
with dyslexia
in Grade 5.

Sister and brother three
years younger.
All smart, talented, musical, artistic,
athletic, loving family.
With educational advantages.



Read the first Draft. Notice the spelling

I doent know what I want to be when I grow up
But I Like to mountain Bike, ^{Skiing} Sailing, and soccer.
I Like sailing the most. I want to Be on tem
Oracle in americas CUP. If I want to do that I think
I need to Be a enginer.

Some classes I will need to take are science
Hydrodynamics, Aerodynamics and Physics
And also math (measurements of Speed and Studing
the wind). I need to be Phycically fit. Finally I need to know
my sailing knots and Just sail to feel good when I sail and I have been
doing that since I was six

Dear [redacted]

I don't know what I want to be when
I grow up. I like to mountain bike, ^{Skiing}, Sailing and
Playing Soccer. I like Sailing the most. I want to be
on Team Oracle in America's Cup. If I want to do
that I think I need to be an engineer.

Some classes I need to take are
Science (Hydrodynamics, Aerodynamics and
Physics), Math (Measurements of speed,
and studying the wind), and Programming. I
need to be physically fit. Finally, I need to
know my sailing knots and just sail to feel
good under pressure, and I have been doing
that since I was six.

Sincerely,
Kaden

Symptomatic of Dyslexia

105 Words – 14
misspellins

doent for don't
moutain for mountain
tean for team
americas for
America's
a for an
enginer for engineer
chydiodynamies for
hydrodynamics

meusuremenunts
for measurements
programing for
programming
siling for sailing
studiing for studying
feels for feel
ben for been
sincerly for sincerely

Dyslexia: First Grade Twins Monster Test Results

	Monster Test Word	Kaia (No Symptoms) Spelling & (Phase)	Anderson (Symptoms of Dyslexia) Spelling & (Phase)
1	monster	monst (2) left out /r/	moostootr (3)*
2	united	ynitid (4)	unidid (4)
3	dress	jres (4)	jest (2) left out /r/
4	bottom	botum (4)	bootum (4)
5	hiked	hicked (4)	hicht (3)
6	human	Hyomin (4)	pwmim (2) left out /h/*
7	eagle	egol (4)	igl (3)*
8	closed	closed ✓	codst (2) left out /l/
9	bumped	bumed (2) left out /p/	but (2) left out /p/*
10	type	tipe (4)	tell (2) left out /ɪ/ and /p/*

Dyslexia Symptomatic Spellings

Kaia

2 Phase 2

7 Phase 4

1 Correct

Anderson

5 Phase 2

3 Phase 3

2 Phase 4

MOOSTOOR (monster)

BOOTUM (bottom)

PWMIM (human)

IGL (eagle)

BUT (bumped)

TELL (type)

* 6 Red Flag Spellings for Dyslexia
No clue about short vowels.

Think about the
Spelling Connection
to Dyslexia?—Let's
Be Reminded:

Explicit spelling instruction is a
**DYSLEXIA SPECIFIC
INTERVENTION.**

- Often you can see symptoms as early as first grade.
- That leads to early intervention.

Dyslexia Is Complex

7 Ways to Accommodate Children with Dyslexia in Regular Classrooms

J. Richard Gentry PhD

Allow	Allow children who may have dyslexia to demonstrate their competence.
Change	Change your seating arrangement to address students' difficulty with organizing, managing time, following teachers directions, filtering out background noise.
Use	Use a research-based spelling curriculum as a dyslexia-specific intervention.
Teach	Teach handwriting, including manuscript for beginners and cursive beginning in second grade.
Expect	Expect to give those with dyslexia more help with proofreading for spelling.
Be	Be sensitive during foreign language study.
Make	Make appropriate accommodations.

Compassion for students who are struggling

Not mistaking dyslexia as a sign of inferior intelligence or laziness

Recognizing that students with dyslexia also have strengths—some experts even suggest dyslexics are gifted and have special talents—such as thinking outside of the box, being creative, entrepreneurial, artistic, and athletic.

What's It Like to Be Diagnosed at 24 Years of Age?

- Emily-Ruth's dyslexia diagnosis included the following:
- Attention Deficit Hyperactivity Disorder (ADHD) — It is common for dyslexia and ADHD to co-occur.
- “Double-deficit dyslexia”—a more severe form of dyslexia—based on the theory that Emily-Ruth demonstrated deficits in both phonological awareness and rapid naming speed. Auditory memory and sequencing skills were reported to be at a fifth-grade level.
- Dysgraphia. Emily-Ruth's crate included outstanding samples of talented writing at every level of schooling, yet there was early evidence in first grade of symptoms of dysgraphia such as difficulty spacing things out on paper or within margins, inconsistency in letter and word spacing, and unfinished words or missing words or letters.
- A “severe degree” of Irlen Syndrome, a perceptual processing disorder for light, color, and contrast sensitivity, such as difficulty with fluorescent lights, which Emily-Ruth self-reported. The report seemed to imply that this was one of the most important findings.

There were symptoms of all of these in kindergarten and first grade!

Understanding dyslexia may help people avoid problems later in life.

While most people with dyslexia do not have psychological and emotional disorders, research shows they are disproportionately at greater risk for the following (Cosden, Patz, and Donahue, 2010):

- Low self-esteem
- High anxiety
- Difficulty reading social cues (Ryan, 2004)
- Poor social relationships
- Depression
- Likelihood of substance abuse including drugs, tobacco, and alcohol (Cosden, 2001)
- Poor understanding of their own strengths and weaknesses (California Dyslexia Guidelines, 2017)



Filming *The Truth About
Reading* documentary

Sold a Story podcast by
Emily Handford

John Cockran

Nick Nanton

The Teacher Who Couldn't Read

Award Winning Videographer

Gifts found in people with dyslexia:

Some experts present evidence that dyslexics are gifted beyond what is found in non-dyslexic individuals and often have special talents:

- Thinking outside of the box
- Visualization in three dimensions
- Being creative, entrepreneurial, artistic, and athletic

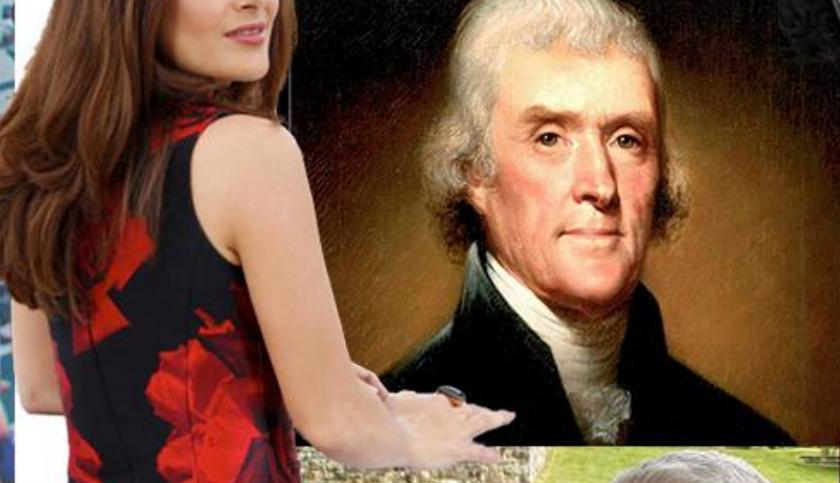
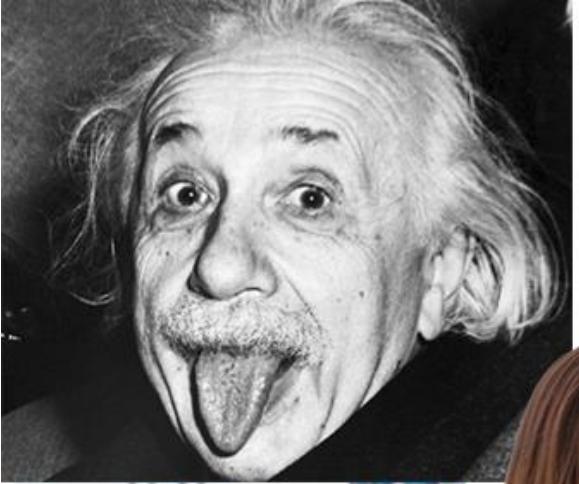
Dyslexia can lead to positive life skills that are developed within oneself such as grit and resilience, being optimistic and in-tune with one's passion, taking positive risks and getting the job done, all qualities of "the entrepreneurial spirit" (Ehrlichman, 2015) which seems to be in great abundance in millennials.

Psychology Today – J. Richard Gentry blog

“New Riveting Reports on Neuroscience, Dyslexia, and Reading”

<https://www.psychologytoday.com/us/blog/raising-readers-writers-and-spellers/202211/new-riveting-reports-neuroscience-dyslexia-and>

See how theory and practice are coming together to help readers.



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<http://www.psychologytoday.com/blog/raising-readers-writers-and-spellers>

Thank
You!