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DYSLEXIA AND ILLITERACY: STRUCTURED LITERACY AND THE SCIENCE OF READING

1

Introduction



2

Reading and the Numbers

- 2/3 of U.S. 4th graders are not proficient in reading – this data is from 2019 from the National Assessment of Educational Progress
- 90 percent of high school dropouts struggled with reading in third grade
- Children who do not read on grade level by the end of 3rd grade have only a 1 in 8 chance of ever catching up and are 4 times more likely to drop out of school
- 1 in 3 Houston adults is functionally illiterate
- 72% of Texas 3rd graders are not reading on grade level
- 85% of youth who interface with the juvenile justice system are functionally illiterate

3

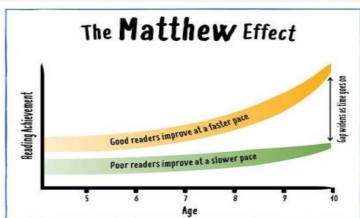
What are the factors that affect reading?

- Vulnerable populations
 - Learning disabilities/dyslexia
 - Lack of proper teacher preparation in the science of reading
 - Lack of evidenced-based instruction in schools
- Teaching reading is rocket science!



4

Matthew Effect



5

State	Program #	Early Reading Grade #	Last Reported #	Type #
Alabama	1	1	1	1
Alaska	1	1	1	1
Arizona	1	1	1	1
Arkansas	1	1	1	1
California	1	1	1	1
Colorado	1	1	1	1
Connecticut	1	1	1	1
Delaware	1	1	1	1
District of Columbia	1	1	1	1
Florida	1	1	1	1
Georgia	1	1	1	1
Hawaii	1	1	1	1
Idaho	1	1	1	1
Illinois	1	1	1	1
Indiana	1	1	1	1
Iowa	1	1	1	1
Kansas	1	1	1	1
Kentucky	1	1	1	1
Louisiana	1	1	1	1
Maine	1	1	1	1
Maryland	1	1	1	1
Massachusetts	1	1	1	1
Michigan	1	1	1	1
Minnesota	1	1	1	1
Mississippi	1	1	1	1
Missouri	1	1	1	1
Montana	1	1	1	1
Nebraska	1	1	1	1
Nevada	1	1	1	1
New Hampshire	1	1	1	1
New Jersey	1	1	1	1
New Mexico	1	1	1	1
New York	1	1	1	1
North Carolina	1	1	1	1
North Dakota	1	1	1	1
Ohio	1	1	1	1
Oklahoma	1	1	1	1
Oregon	1	1	1	1
Pennsylvania	1	1	1	1
Rhode Island	1	1	1	1
South Carolina	1	1	1	1
South Dakota	1	1	1	1
Tennessee	1	1	1	1
Texas	1	1	1	1
Utah	1	1	1	1
Vermont	1	1	1	1
Virginia	1	1	1	1
Washington	1	1	1	1
West Virginia	1	1	1	1
Wisconsin	1	1	1	1
Wyoming	1	1	1	1

PREPARING OUR TEACHERS

6

Dyslexia

- "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. These difficulties typically result from a deficiency in the phonological component of language that is often **unexpected in relation to other cognitive abilities** and the provision of **effective classroom instruction**. Secondary consequences may include problems in reading comprehension and reduced reading experiences that can impede growth of vocabulary and background knowledge (Lyon et al., 2003, p. 2)."
- 20% of the general population has dyslexia
- 4.49% of Texas public school children have been identified with dyslexia
- Houston – we have a problem!

7

Dyslexia and Prisons

- Approximately 80% of prison inmates are reported to be functionally illiterate
- A study of Texas prisoners in 2000 found that 48% were dyslexic, and two-thirds struggled with reading comprehension
- State prisons currently do not screen for learning disabilities or ADHD. The federal government passed the First Step Act in 2018 that requires all prison inmates to be screened for dyslexia (Federal Prison Only)
- ADHD is also prevalent in the prison population
- The incidence of Dyslexia is disproportionately higher within the prison system than in the general population

8

The Preschool Years

- Trouble learning common nursery rhymes, such as "Jack and Jill"
- Difficulty learning (and remembering) the names of letters in the alphabet
- Seems unable to recognize letters in his/her own name
- Mispronounces familiar words; persistent "baby talk"
- Doesn't recognize rhyming patterns like *cat, bat, rat*
- A family history of reading and/or spelling difficulties (dyslexia often runs in families)

© Sally Shaywitz, *Overcoming Dyslexia*, p. 122

DYSLEXIA

9

Kindergarten & First Grade

Difficulties

- Reading errors that show no connection to the sounds of the letters on the page—will say "puppy" instead of the written word "dog" on an illustrated page with a picture of a dog
- Does not understand that words come apart
- Complains about how hard reading is; "disappears" when it is time to read
- A history of reading problems in parents or siblings
- Cannot sound out even simple words like *cat*, *map*, *nap*
- Does not associate letters with sounds, such as the letter *b* with the "b" sound

DYSLEXIA

10

Second Grade through High School

Reading

- Very slow in acquiring reading skills. Reading is slow and awkward
- Trouble reading unfamiliar words, often making wild guesses because he cannot sound out the word
- Doesn't seem to have a strategy for reading new words
- Avoids reading out loud

Spelling

- Searches for a specific word and ends up using vague language, such as "bull" or "thing," without naming the object
- Pines, fumbles, and/or uses lots of "um"s when speaking
- Confuses words that sound alike, such as saying "terrace" for "volcano," substituting "taste" for "taste"
- Mispronunciation of long, unfamiliar or complicated words
- Seems to need extra time to respond to questions

School and Life

- Trouble remembering dates, names, telephone numbers, random facts
- Struggles to finish tests on time
- Extreme difficulty learning a foreign language
- Poor spelling
- Messy handwriting
- Low self-esteem that may not be immediately visible

DYSLEXIA

11

Young Adults & Adults

Reading

- A childhood history of reading and spelling difficulties
- While reading skills have developed over time, reading still requires great effort and is done at a slow pace
- Rarely reads for pleasure
- Slow reading of most materials—books, manuals, subtitles in films
- Avoids reading aloud

Spelling

- Earlier oral language difficulties persist, including a lack of fluency and glossiness; frequent use of "um"s and repeated language, and general anxiety when speaking
- Often pronounces the names of people and places incorrectly, trips over parts of words
- Difficulty remembering names of people and places; confuses names that sound alike
- Struggles to retrieve words; frequently has "it was on the tip of my tongue" moments
- Rarely has a full response in conversations; struggles when put on the spot
- Spoken vocabulary is smaller than listening vocabulary
- Avoids using words that might be mispronounced

School & Life

- Despite good grades, often says he's dumb or is concerned that peers think he's dumb
- Frustrated by multiple-choice tests
- Frequently sacrifices social life for studying
- Suffers extreme fatigue when reading
- Performs rote clerical tasks poorly

DYSLEXIA

12

Dyslexia Self-Assessment for Adults

1. Do you read slowly?
2. Did you have trouble learning how to read when you were in school?
3. Do you often have to read something two or three times before it makes sense?
4. Are you uncomfortable reading out loud?
5. Do you omit, transpose, or add letters when you are reading or writing?
6. Do you find you still have spelling mistakes in your writing even after Spell Check?
7. Do you find it difficult to pronounce uncommon multi-syllable words when you are reading?
8. Do you choose to read magazines or short articles rather than longer books and novels?
9. When you were in school, did you find it extremely difficult to learn a foreign language?
10. Do you avoid work projects or courses that require extensive reading?

DYSLEXIA
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13

5 Myths and Facts About Dyslexia

Myth: "Dyslexia is something children will outgrow."	Fact: Children with dyslexia continue to face challenges as they grow.
Myth: "Dyslexia is just a problem of visual perception."	Fact: Studies show that dyslexics have difficulty at the phoneme level.
Myth: "Dyslexia affects more boys than girls."	Fact: It affects girls and boys equally. Boys are more likely to be referred by schools for diagnosis.
Myth: "Dyslexia only affects people who speak English."	Fact: Dyslexia occurs in every language, even the ones that don't use an alphabet script.
Myth: "A person with dyslexia can't be a good reader."	Fact: With intense systematic instruction, a person with dyslexia can become a good reader.

MYTHS AND FACTS

14

BRAIN ACTIVITY DURING READING

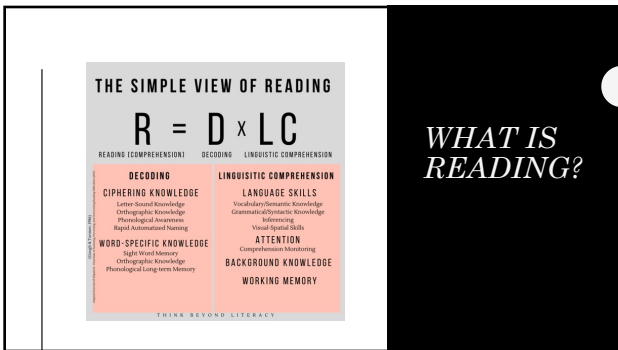
Dyslexia

- Non-dyslexics use three areas on the left hemisphere of the brain to for language processing tasks
- Dyslexics typically use the right side of the brain to process language. The right side of the brain is not intended for this and does it inefficiently
- Neuroscience shows that evidence-based interventions can rewire dyslexic brains to use the left hemisphere!

15



19



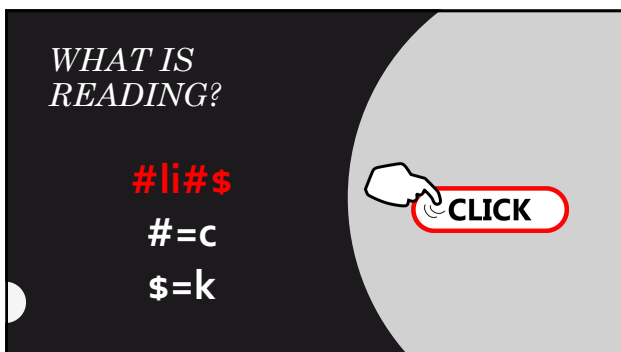
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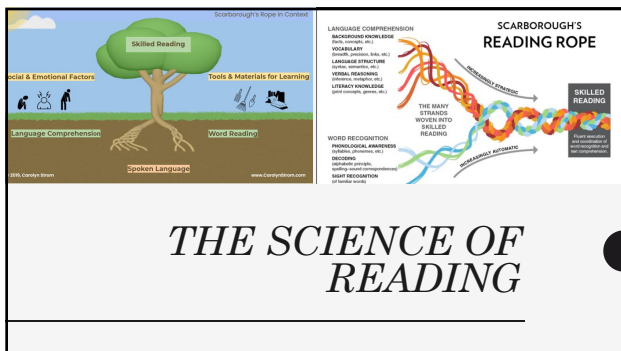
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22



23



24

The Ladder of Reading

85% Learning to read is relatively easy with broad instruction. **Advantaged** by a Structured Literacy approach.

40 to 60% Learning to read proficiently requires code-based explicit, systematic, and sequential instruction. **Structured Literacy approach essential.**

10 to 15% (Dyslexia) Learning to read requires code-based explicit, systematic, sequential, and diagnostic instruction with more opportunities. **Structured Literacy approach essential.**

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 Adapted by Sean Strickland
 June, 1995, rev. 10/08 (p. 10), 10/15 (revised), 2016
 www.nancyyoung.com

25

The Logic of English: A Common-Sense Approach to Reading, Spelling, and Literacy by Denise Eide

STRUCTURED LITERACY

26

STRUCTURED LITERACY PRIMER

Why Structured Literacy?
 Children with dyslexia are in nearly every classroom—but effective reading instruction is NOT.

~Dyslexia affects up to 15-20% of the population and may have symptoms of dyslexia.

Learning to read can be a significant challenge for students with dyslexia. Fortunately, this challenge usually CAN be overcome with effective reading instruction. Unfortunately, if not overcome, lifelong consequences can be harsh.

Popular reading approaches (e.g., Guided Reading or Balanced Literacy) are not effective for students with dyslexia because these approaches do not focus on the decoding skills struggling readers need to succeed.

Structured Literacy explicitly teaches systematic word-identification/decoding strategies. These benefit most students and are vital for those with dyslexia.

What is Structured Literacy?

27

What is Structured Literacy?
Phonemes to Graphemes



/m/ /a/ /t/ = m - a - t

31

What is Structured Literacy?
Phonemes to Graphemes



/k/ /o/ /f/ = c - ou - gh

32

What is Structured Literacy?
Orthography

kelp

kite

sky

Spelling Pattern: When the (k) sounds comes before e, i, or y, spell with a k

33

LOWER CASE CURSIVE LETTERS GROUPED BY APPROACH STROKES

Push up, stop
i t p s r j u w

Push up, over, down
r m n y w a g

Under, over, stop
r a d g o c q

Down, up, down left
l l f h k b e

WHAT IS STRUCTURED LITERACY?
CURSIVE HANDWRITING

34

THE 6 SYLLABLE TYPES AND WHY THEY MATTER

VC Closed
V→ Open
Vr R-Controlled Vowel

VCe Vowel Component
VV Vowel Team
F.S.S. Final Stable Syllable

VOWEL-CONSONANT-CLUSTERS SYLLABLE
CLOSED SYLLABLE
VOWEL-PAIR SYLLABLE
VOWEL-R SYLLABLE
FINAL STABLE SYLLABLE

CONSONANT CLUSTERS
OPEN SYLLABLE

What is Structured Literacy? Syllable Types

- Vowels are tricky –
- The 6 syllable types will help!
- Cat – Closed Syllable
- Hi – Open Syllable
- Burn – Vowel R Syllable
- Bike – Vowel Consonant E Syllable
- Book – Vowel Pair Syllable
- Bubble – Final Stable Syllable

35

VCV

basic

Syllable Division
WHAT IS STRUCTURED LITERACY?

36

What is Structured Literacy?
Language Comprehension

- Morphology - Anglo-Saxon/Latin/Greek/Other Languages
- Roots/Prefixes/Suffixes
- Syntax
- Grammar – Structure of Language
- Semantics
- Vocabulary
- Multiple Meaning Web
- Semantic Web
- Card Pyramids

37

What is Structured Literacy?

Root Word: **pend=** hang, weigh, pay

1. appendix (n)	a collection of supplementary material that usually hangs at the end of a book; extra materials added to the end of a book
2. dependent (adj)	relying on someone else for aid or support; weighing down on someone else
3. expenditure (n)	an expense; the amount needed to be paid out
4. impending (adj)	about to occur; to threaten to happen; to weigh down upon someone
5. independent (adj)	not relying on someone else for aid or support; not weighing down on someone else
6. pendant(n)	an object that hangs usually from a necklace
7. pending(adj)	hanging ;n; something not yet decided; awaiting a conclusion
8. pendulum (n)	something that hangs and swings back and forth (clock)
9. perpendicular (adj)	intersecting at or forming right angles
10. suspended (v)	hanging ; delayed

- Morphology – Roots/Suffixes/Prefixes

38

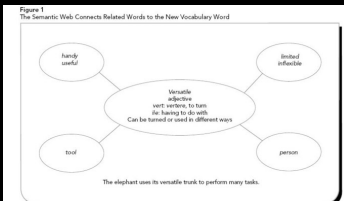
What is Structured Literacy?

- Knee/knife/knock + gnāt/gnarl/gnash
- Choir/jache/orchid
- Chandelier/chef/champagne

Word Origin

39

Figure 1
The Semantic Web Connects Related Words to the New Vocabulary Word



Verbally, adjectives use trunks to talk. Can be turned or used in different ways.

handy useful linked reflexive

trunk person

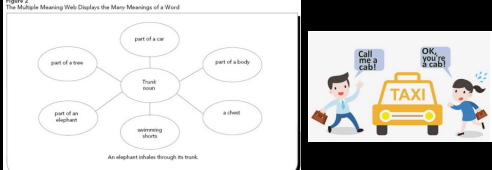
The elephant uses its versatile trunk to perform many tasks.

What is Structured Literacy?

- Semantic Web

43

Figure 2
The Multiple Meaning Web Displays the Many Meanings of a Word



part of a car part of a body

part of a tree trunk trunk a chest

part of an elephant a hat

An elephant inhales through its trunk.

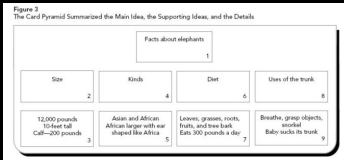
Call me a cab! OK, will be a cab!

WHAT IS STRUCTURED LITERACY?

Multiple Meaning Web

44

Figure 3
The Card Pyramid Summarized the Main Idea, the Supporting Ideas, and the Details



Facts about elephants

Size	Kinds	Diet	Uses of the trunk
12,000 pounds 50 feet tall Call—200 pounds	Asian and African African larger with ear shaped like African	Leaves, grasses, roots, fruits, and tree bark Eat 300 pounds a day	Breathe, grasp objects, swim Baby works its trunk

What is Structured Literacy?

- Card Pyramid for expository text

45

STRUCTURED LITERACY PRIMER
 Effective reading instruction for most children incorporates all this.

To ensure that all children have access to effective reading instruction, we must ensure that their teachers have BOTH the ...

- ✓ deep content knowledge and
- ✓ specific teaching expertise needed ...

to teach these elements according to these principles.

Inner-Circle Elements
Outer-Circle Teaching Principles

What is Structured Literacy?

- Structured Literacy, when taught using all the principles and elements, teaches dyslexic children how to read.
- We have the answer on how to teach all children to read – and the answer is structured literacy!

46

Amplify.

Science of Reading: The Podcast

International DYSLEXIA Association - Teacher Branch

International DYSLEXIA Association

LETRS Professional Learning for Educators

SCOTTISH RITE

rawson@saunders INSTITUTE

neuhaus RESEARCH GROUP

Resources

47

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48

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