Teaching Reading IS Rocket Science: What Expert Teachers of Reading Know and Do

Louisa Moats, Ed.D.
MTSU Fox Conference
2020

NIH-NICHD Multidisciplinary Research Program
(North America; Lyon, 1985-2005)
The NICHD Reading Research Program: 1963 to Present

Directors: Jim Kavanaugh (1963-1987)
            G. Reid Lyon (1991-2005)
            Peggy McCardle (2005-2013)

BARRIERS
- Lab-based/not informed by classroom realities
- Top-down/not respectful or welcoming
- Technical vocabulary/not clear, vivid, engaging
- Grant & publishing-driven

THE READING RESEARCH - PRACTICE CHASM

READING SCIENTISTS

Why? How?

READING EDUCATORS

© COWEN

BARRIERS
- Unclear classroom applications
- Insufficient training/support
- Lack of access to research
- Insufficient time/training for critical review

Come learn from us!
Teachers’ Disciplinary Knowledge: A Topic of Discussion for 25+ Years

- Wanted: Teachers with Knowledge of Language - Lyon & Moats, 1996
- Informed Instruction for Reading Success - Brady & Moats, 1997
- Teaching Reading is Rocket Science - AFT (Moats), 1999, 2020
- Knowledge to Support the Teaching of Reading - Snow, Griffin, & Burns, 2005
- Special issues of the Journal of Learning Disabilities and Reading and Writing (2009)
- International Dyslexia Association’s Knowledge and Practice Standards for Teachers of Reading (2010, 2018)

Why Do We Need Content-rich Professional Development? (NCTQ, 2013)

- Overall ratings on 608 institutions
- Additional data on another 522 institutions
- Altogether, data on where 99% of new teachers are trained
Only 29% introduce teachers to 5 essential components named in scientific reviews.

NCTQ: Only 22% adequately prepare teachers to teach “struggling readers.”
Teacher Educators Themselves are Often Not Prepared to Teach the Science of Reading

Binks-Cantrell, Joshi, & Washburn, “Peter effect in the preparation of reading teachers” (2012), *Scientific Studies of Reading*

Barksdale Reading Institute & The Institutions for Higher Learning, *2014-15 Study of Mississippi Teacher Preparation for Early-Literacy Instruction*
<table>
<thead>
<tr>
<th>Task</th>
<th>University Faculty</th>
<th>First Year Teachers</th>
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<tbody>
<tr>
<td>Define and count the number of syllables correctly</td>
<td>≈ 92%</td>
<td>≈ 92%</td>
</tr>
<tr>
<td>Identifying the definition of a phoneme</td>
<td>98%</td>
<td>89%</td>
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<tr>
<td>Correctly recognize that “chef” and “shoe” begin with the same sound.</td>
<td>92%</td>
<td>88%</td>
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<tr>
<td>Correctly recognize a word with two closed syllables (napkin)</td>
<td>65%</td>
<td>53%</td>
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<tr>
<td>Correctly recognize the definition of phonological awareness</td>
<td>58%</td>
<td>47%</td>
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<td>No. of morphemes:</td>
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<tr>
<td>heaven</td>
<td>40%</td>
<td>21%</td>
</tr>
<tr>
<td>observer</td>
<td>26%</td>
<td>18%</td>
</tr>
<tr>
<td>Frogs</td>
<td>29%</td>
<td>24%</td>
</tr>
<tr>
<td>Name all the 5 components of NRP</td>
<td>15%</td>
<td>0%</td>
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Barksdale Study, Mississippi, 2014-2015

- **Finding #3** – Established research-based principles of early-literacy instruction remain largely unapplied in preparation and practice.

- **Finding #4** – “Balanced Literacy”--as interpreted by Mississippi teacher preparation programs and in many K-3 classrooms—has resulted in widespread use of practices that are not supported by research.
Is Teaching Experience the Explanation?

- In study after study, teaching experience appears unrelated to or only somewhat related to knowledge of language structure or the processes of reading development

- Formal instruction to build disciplinary knowledge is required!

- Example: “Readers’ and Writers’ Workshop” based on “thousands of hours of teaching experience” by the authors – but is riddled with advice on teaching that is contrary to scientific research and accepted understandings of how children to learn to read
Disciplinary Knowledge is Not Obvious, Natural, or Intuitive

Cunningham et al. (2009) asked teachers how they would prefer to teach reading.

- “…it appears that a philosophical orientation towards literature-based instruction tends to be more exclusive of other instructional approaches”

- Teachers’ preferred practices do not conform to current research and policy recommendations for teaching first graders

‘Philosophy’ Can Get in the Way

- “…[first grade teachers’] philosophical framework about reading instruction was germane to the extent teachers learned the content of direct methods of reading instruction”

- Those with a “whole language” orientation were less responsive to PD in phonology, phonics, and spelling (Brady et al., 2011)
Does Teacher Knowledge Matter?

- Link between teacher knowledge and student outcome has been demonstrated in a handful of studies, but these factors are moderated by *implementation supported by coaching*

- McCutchen, Harry, Cunningham & Cox, 2002
- McCutchen et al., 2002
- Moats & Foorman, 2003
- Carlisle & Berebitsky, 2011

- And many studies by Spear-Swerling, Washburn, Binks-Cantrell, Joshi, Piasta, A. Cunningham and others

Mentor Condition: Teachers Grouped by Ability to Conduct Systematic, Explicit Instruction

![Graph showing phoneme awareness scores on the Teacher Knowledge Survey](image.png)
What Teachers Know Affects What They Do

- “…Teachers who performed well on phonics tasks [on the knowledge survey] prefer spending more time on explicit and systematic instructional practices and less time on unstructured literature activities”
- Prior knowledge [of language] plays a role in teachers’ choice of instructional activities
  - Cunningham et al.

Good Instructional Programs Do Not Supplant Teacher Training

- Students’ gains were predicted by the interaction between teacher knowledge and amount of explicit decoding instruction students received
- Highly scripted core curricula “cannot replace the expert teaching of highly knowledgeable teachers”
- More code instruction by teachers with low levels of knowledge did not produce student gains

Piasta et al. (*Scientific Studies of Reading*, 2009)
Key (and Counterintuitive) Concept: Reading is NOT Primarily a Visual Skill!

- Shorter words are not always easier to spell and read than longer words.
- Generic visual-spatial skills are virtually unrelated to reading and spelling.
- Rote visual memorization drills are generally ineffective.
- Language proficiencies are the best predictors of reading and spelling.
- Structured language teaching is the most effective approach.

Dear Michael, I am going to take a trip to Hawaii and I am inviting you when we are there we will go sightseeing and take a swim, go boating and go manta ray or helicopter ride around the Islands. Then we will kick all the way home.

Goodbye.

Your friend,

DANNY, GRADE 7, FSIQ 110
Word configuration is not distinctive.

Words are not recognized by shape.

We read/spell this way:
Context Does Not Drive Word Recognition or Printed Word Memory

“…Don’t know that word? Well just keep reading (or peak at the pictures) and see what might make sense here…”

How We Recognize and Spell Words

unreachable
un-reach-able
un-reach-a-ble
u-n-r-e-a-ch-a-b-le
u-n-r-e-a-c-h-a-b-l-e

Units of Analysis

word
morpheme
syllable
grapheme
letter
The Reading Brain (Dehaene, 2013)

Pronunciation, Articulation

Language Comprehension

Visual Word Form Area

The Language Processing Systems of the Brain (Seidenberg)

Context

Meaning (Lexicon)

Phonemic Awareness

speech sound system

Writing output

Phonological System

Phonics

Letter/word memory

Orthographic System

reading input

Writing output

speech output

Phonics

Phonemic Awareness

Letter/word memory
So...What is in powerful PD?

- Scientifically sound models of how we learn to read
- Comprehensive road maps for teaching all essential components, independent of programs
- How English language is structured at all levels
- Modeling and practice of structured literacy lessons

Reading is a multifaceted skill, gradually acquired over years of instruction and practice.
Using Data: Selecting Priorities for Instruction, Using the “Rope” Model for Reference

- Phonological and phoneme awareness
- Using phonics to decode/spell accurately
- Recognizing/writing words “by sight” or automatically
- Knowing what most words mean (vocabulary)
- Bringing background knowledge to bear during reading
- Interpreting academic language, especially complex syntax
- Navigating different kinds of texts; monitoring comprehension and repairing miscomprehension if necessary

What is Hard about Phoneme Awareness?

- Phonemes are not “letter-sounds”
  - How many speech sounds in “sing”
  - What is the third phoneme in “axe”

- Phoneme awareness is not phonics
Phoneme Segmentation of “Hard Words”

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<td>fuse</td>
<td>21</td>
<td>3</td>
</tr>
<tr>
<td>use</td>
<td>17</td>
<td>3</td>
</tr>
</tbody>
</table>

A Phoneme is a Sound AND a Mouth Gesture

Phonemes are shaped by the mouth according to the sounds that surround them. What do you feel your mouth doing with /d/ as you say these words?

desk

dream

dadder

would you
Why Phonemes are Elusive: Coarticulation

"elephant"

"egg"

"echo"

Vowel Phonemes in Order of Articulation (LETRS 3rd ed.)
The Vowel Spelling Chart (LETRS 3rd ed.)

Louisa.moats@gmail.com

Teach phoneme-grapheme correspondences.

<table>
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</tbody>
</table>
Strive for “Deep Lexical Quality” in Word Learning

- Antonym
- Synonym

Examples in context:
- Sounds, spelling, meaningful parts, words it is to be distinguished from.

- connotation
- denotation

Multiple meanings

Introduce a New Vocabulary with a Routine

- Pronounce and read the word. Examine the spelling.
- Tell students what the new word means, using a student friendly definition.
- Say more about the word. Use it several times while elaborating its meaning.
- Ask questions about the word’s meaning.
- Elicit word use by students.
How to Introduce a New Word: Example

Pronounce and read the word.
flexible

Examine the spelling.
flex – ible

Identify familiar parts (morphemes).
flex, to bend; -ible, an adjective suffix

Tell students what the new word means, using a student friendly definition.
“Flexible material can bend easily without breaking.”

Introducing a New Word, continued...

Say more about the word. Use it several times.
The best gymnasts are very flexible; they can bend way over or do the splits.

Ask questions about the word’s meaning.
Is hair flexible or rigid?
Is a nail flexible or rigid?

Elicit word use by students.
A healthy ankle can roll all around if it is ________.
My schedule can be adjusted; I’m ________.
Paperbook books bend in your hands; they are __________.
Generalization to Related Word Forms

flexion  flexibility
inflexible  flexile
flexor  reflexive
reflection  reflective
deflect  circumflexion
genuflection

Goal:
Mental Model

Surface Code
Text Base

LTM
Reading Comprehension Depends on Active Processing of...

- word meanings as used in context
- figurative language
- multiple meanings
- academic language formalities
- discourse structure
- phrase structure in sentences
- topic-specific terminology

Words in “Hard” Sentences

- The rigid metal bar was replaced by a more flexible one.
- We had no reason to think she was less flexible than her competitor.
- Lack of flexibility is a major problem.
- The firm foot bed was adequate, although it would have been better constructed with more flexible material.
The IDA Knowledge and Practice Standards

Building Teacher Knowledge

- how children learn to read
- common sources of reading problems, including dyslexia, and how to assess them
- how the various components of reading develop
- what kinds of instruction have been found to be effective
- how to implement lessons and activities

language

- meaning (semantics)
- discourse structure
- morpheme (morphology)
- pragmatic
- writing system (orthography)

sentences (syntax)

phonology
**In Sum: What Can an Expert Teacher Do?**

- Implement explicit teaching and monitor whether students are learning
- Explain why words are written the way they are
- Choose examples and give corrective feedback
- Lead students to the meanings in text
- Base instructional decisions on data
- Adapt lessons for different reading profiles

**THANK YOU for Joining Me in This Effort!**

- To all teachers who strive to understand more and improve their practice every day
- To the leaders who are unafraid to confront bad ideas and ineffective practices and to turn us in a better direction
- To MTSU, Dr. Tim Odegard, Tennessee literacy leaders, and sponsors of this conference.

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Explicit Language Instruction is the Heart of Structured Literacy

Louisa Moats, Ed.D.

Definition of Structured Literacy

Key features of SL approaches include (a) explicit, systematic, and sequential teaching of language at multiple levels—phonemes, letter–sound relationships, syllable patterns, morphemes, vocabulary, sentence structure, paragraph structure, and text structure; (b) cumulative practice and ongoing review; (c) a high level of student–teacher interaction; (d) the use of carefully chosen examples and nonexamples; (e) decodable text; and (f) prompt, corrective feedback.

- adapted from Spear-Swerling, 2019
Non-SL Programs

- Guided Reading (Burkins & Croft, 2010)
- Reader’s Workshop (Calkins, 2000),
- Balanced Literacy,
- Four Blocks Literacy (Cunningham, Hall, & Sigmon, 1999),
- Reading Recovery (Clay, 1994),
- Leveled Literacy Intervention (Fountas & Pinnell, 2009).

The Content is Language: Words and Rules (Pinker, 1999)

- Phonology
- Morphology
- Lexical semantics
- Orthography
- Syntax
- Pragmatics
- Sentential semantics
The Simple View of Reading

\[ R = D \times C \]

“Capacity for reading comprehension is determined by ability to decode text and ability to comprehend spoken language.”

-Phil Gough
Scarborough’s “Rope” – A Model of Reading Development

LANGUAGE COMPREHENSION
- Background Knowledge
- Vocabulary Knowledge
- Language Structures
- Verbal Reasoning
- Literacy Knowledge

WORD RECOGNITION
- Phonological Awareness
- Decoding (and Spelling)
- Sight Recognition

SKILLED READING: fluent execution and coordination of word recognition and text comprehension.

What Sound Does Each Letter Represent?

f k n
Practice

Blend Sounds Into Words

in, θιν, θιη, fiš
fin, šin, θικ
kín, kíŋ, kík
kíŋk, ink, fink, θíŋk
“Sight” Words

a end e ṣẹ wəz

Read Phrases and Sentences

1. thik aend thii
2. wəz a fink
3. thii kii ąż
4. kik ṣe shi
5. kiiŋ ṣe ṣiiŋ
6. fišin wəz e kik
7. ṣe kiiŋ wəz fišiŋ
8. ṣe kiiŋ wəz thiiŋ
9. ṣe fišiŋ fin wəz thiiŋ
10. wəz ṣe thiiŋ e fišiŋ?
Read the Story

de kin was thik fim fum end wentid tu fis. "aj went e thik fis," thit de kin. de kin kct e thim fis. "aj wis de fis was thik," wisit de kin. de kin sckt de fis end kat de kin k in de thim. de fis wjkt tu de kin!

Let’s Reflect

› Where did you start to struggle?
› What did this exercise feel like?
› What would a teacher have to do to make sure all students “got” what was taught?
  ◦ One new sound-symbol relationship at a time
  ◦ Guided practice and independent practice until overlearned
  ◦ Immediate corrective feedback
  ◦ Application to both decoding and writing until recall is more fluent
  ◦ Minimal number of irregular words or symbols that have not been taught explicitly
Let’s Compare SL with Non-SL

- Focus on oral language (speech) as reference point for print
- Phoneme awareness the start point for understanding print
- Phonemes identified by articulation and sound
- Distinction between “sounds” and “letters”

- Letters are the start point; letters treated as if they “make sounds”
- No explicit teaching of phoneme identity
- No attention to which sounds are confusable
- Treatment of reading as a visual skill

How We “Map” Words to Long-Term Memory
(Kilpatrick, 2015)

/red/  /haz/  have
/r/ /ĕ/ /d/  /h/ /ă/ /z/  /h/ /ă/ /v/
red  haz  have
/ĕ/ /ă/ /d/  /ă/ /z/  /ă/ /v/
re d  h a s  h a v e
The Critical Role of Phoneme Awareness

- Every level of word reading and spelling depends on phoneme awareness
- An internal representation (mental image) of the phonemes in words serves as Velcro or “parking spots” to anchor or match strings of graphemes
- If phoneme awareness is incomplete, inaccurate, out of focus – then anchoring or mapping print to speech will be adversely affected
- In addition, knowledge of word meanings is affected: relevant, reverent; syllabus, syllable; flush, flesh; prude, prune

Phoneme Awareness: How Many Speech Sounds?

- ice
- coin
- weight
- song
- few
- sigh
- creep
- quaint
- fox
- chew

song
fox
Why Is Phoneme Awareness Challenging for Novice Learners?

“Children faced with the task of learning to read in an alphabetic script cannot be assumed to understand that letters represent phonemes because awareness of the phoneme as a linguistic object is not part of their easily accessible mental calculus, and because its existence is obscured by the physical properties of the speech stream.”

(A. Liberman, 1989, Haskins Laboratories of Yale University)

More Than A Sound: A Phoneme Has Articulatory Features

Consonant sounds are closed speech sounds. What is your mouth doing as you say each of these sounds?

/p/ (pop)  /t/ (tip)  /k/ (back)  
/b/ (bob)  /d/ (dip)  /g/ (bag)  
/m/ (mob)  /n/ (nip)  /ng/ (bang)
## Consonant Phonemes by Place and Manner of Articulation

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<tbody>
<tr>
<td></td>
<td>lips (bilabial)</td>
<td>teeth on lips/labiodental</td>
<td>between teeth (interdental)</td>
<td>behind teeth (alveolar)</td>
<td>roof of mouth (palatal)</td>
<td>back of throat (velar)</td>
</tr>
<tr>
<td>stops</td>
<td>/p/ unvoiced</td>
<td>/b/ unvoiced</td>
<td>/t/ voiced</td>
<td>/d/ voiced</td>
<td>/k/ voiced</td>
<td>/g/ voiced</td>
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<td>/ng/ voiced</td>
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## Children with Poorly Developed PA May Confuse Phonemes That Have Similar Features

- **EFRY**
- **INEMS**
- **PASMET**
- **GOACH**
- **SGAT**

- **every**
- **items**
- **basement**
- **garage**
- **skate**
Which consonant sounds does this student confuse?

fan  wait  dream
pet  chunk  blade
dig  sled  coach
mob  stick  fright
rope  shine  snowing

Consonant Sound Wall for K-1
(Adapted from Moats, 2000)

<table>
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<td>Tt</td>
<td>Dd</td>
<td>Cc</td>
<td>Gg</td>
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<td>-ng</td>
<td>Ff</td>
<td>Vv</td>
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<td>van</td>
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<td>sheep</td>
<td>chips</td>
<td>et</td>
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<td>Yy</td>
<td>Hh</td>
<td>Ll</td>
<td>Rr</td>
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<td>well</td>
<td>yarn</td>
<td>house</td>
<td>lamp</td>
<td>rake</td>
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Louisa Moats, DIBELS SUMMIT, 2010
Consonant Sound Wall for grades 2-3
(Adapted from Moats, 2009)

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<tbody>
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<td>B  b  bat</td>
<td>T  t  ten  ed  walked</td>
<td>D  d  dog  ed  played</td>
<td>C  c  cat  K  k  kiss  ck  duck  ch  school</td>
<td>G  g  go  gh  ghost</td>
</tr>
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<td>/m/</td>
<td>/n/</td>
<td>/ng/</td>
<td>/fl/</td>
<td>/l/</td>
<td>/th/</td>
</tr>
<tr>
<td>M  m  man  mb  lamb  mn  autumn</td>
<td>N  n  nest  kn  knight  gn  sligh  ng  ring  n  pink</td>
<td>F  f  fish  ff  flour  ph  phone  gh  tough</td>
<td>V  v  van  f  v  fl  thr  th  thr  this</td>
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<td>/y/</td>
<td></td>
</tr>
<tr>
<td>S  s  sun  ss  dress  c  city  sc  science</td>
<td>Z  z  zipper  zz  jazz  s  was  x  Xerox</td>
<td>S  sh  sheep  ch  Chicago  ci  special  si  mansion</td>
<td>C  ch  chips  tch  catch  th  this  en  en  edge  fudge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/wh/</td>
<td>/l/</td>
<td>/u/</td>
<td>/l/</td>
<td>/r/</td>
<td></td>
</tr>
<tr>
<td>W  wh  wheel  wh  wh  wheel  ly  yarn  u  use  li  lamp  l  bell</td>
<td>H  h  house  wh  who  i  i  in  y  y  y  y  y  y  y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Vowel Sounds of English, by Articulation
Sound Wall in First Grade

Coarticulation: Phonemes Overlap in Spoken Words

- elephant
- egg
- echo

©Anne Whitney, Ed.D., CCC-SLP
“Key Words” for Short Vowels

**GOOD**
- apple
- itch
- up
- octopus
- echo, Ed, edge

**NOT SO GOOD**
- cat
- igloo, iguana, Indian
- umbrella
- dog, off
- hen, elephant,
- engine, eye (!)

<table>
<thead>
<tr>
<th>Typical Age</th>
<th>Skill Achieved by Most Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Rhyme identification, alliteration</td>
</tr>
<tr>
<td>5</td>
<td>Rhyme production, phoneme matching, syllables counting</td>
</tr>
<tr>
<td>5.5</td>
<td>Onset-rime, initial consonant isolation</td>
</tr>
<tr>
<td>6</td>
<td>Phoneme blending, segmentation (simple)</td>
</tr>
<tr>
<td>6.5</td>
<td>Phoneme segmentation, blending, substitution</td>
</tr>
<tr>
<td>7</td>
<td>Initial and final sound deletion</td>
</tr>
<tr>
<td>8</td>
<td>Deletion with blends</td>
</tr>
<tr>
<td>9</td>
<td>Longer and more complex deletion tasks</td>
</tr>
</tbody>
</table>
**Ehri’s Phases of Word Reading Development and their Phonological Counterparts (Kilpatrick)**

<table>
<thead>
<tr>
<th>Phonological Development</th>
<th>Word-Reading Development (Ehri)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Early Phonological Awareness</td>
<td>1. Letter Name &amp; Letter Sound Knowledge</td>
</tr>
<tr>
<td>Rhyming, Alliteration, Syllable Segmentation, First Sound Awareness</td>
<td></td>
</tr>
<tr>
<td>2. Basic Phonemic Awareness</td>
<td>2. Phonic Decoding &amp; Basic Spelling Skills</td>
</tr>
<tr>
<td>Segmentation &amp; Blending</td>
<td></td>
</tr>
<tr>
<td>3. Advanced Phonemic Awareness</td>
<td>3. Orthographic Mapping</td>
</tr>
<tr>
<td>Best assessed via phonemic manipulation (and timed)</td>
<td>Efficient sight word acquisition (an early version of #3 overlaps with #2)</td>
</tr>
</tbody>
</table>

**Agree or Disagree?**

Instruction must focus first on the identity of phonemes, differentiation of confusable sounds, and phoneme segmentation.
General Principles, Teaching PA

- Move from early, to basic, to advanced tasks
- Teach the IDENTITY of each sound, with reference to how it is formed
- Have children produce words and sounds
- Model, lead, observe (I do one, you do one)
- Give immediate corrective feedback
- Use movement – vocal, manual, whole body
- Transition to letters as appropriate.

How Do You Measure All Relevant Aspects of Phonological Skill?


- Adapted from the levels used in Molnnis (1999) & Rosner (1973)
Phoneme Segmentation

› Say the word.
› Model: listen as I say the sounds.
› Guided practice: let’s do one together.
› Now you map the sounds.

/sh/  /ar/  /k/

Sound Substitution with Colored Blocks

› Show me “shop.”

› Now show me “chop.”

› Now show me “chip.”
Sound Chaining with Colored Blocks

steam
stream
street
streets

Phonemic Awareness: Reversal

pay  male  safe
sick  lime  note
Max  sign  file
zone  chow  ice
A Progression of Phonics and Word Study

- phonemes and sound patterns
- grapheme units and sequences
- inflectional morphemes
- derivational morphemes
- syllable spellings
- Latin/Greek
- Anglo-Saxon
- Anglo-Saxon
- Anglo-Saxon

Syllable spellings:
- Latin/Greek
- Anglo-Saxon
- Anglo-Saxon

Derivational morphemes:
- Latin/Greek
- Anglo-Saxon
- Anglo-Saxon

Inflectional morphemes:
- Latin/Greek
- Anglo-Saxon
- Anglo-Saxon

Grapheme units and sequences:
- Latin/Greek
- Anglo-Saxon
- Anglo-Saxon

Phonemes and sound patterns:
- Latin/Greek
- Anglo-Saxon
- Anglo-Saxon
Once upon a time there was a princess she was lost in the h i s t. Kasl the witch kam to kill hr but she did not but The Prince

A pir Hand Lin Kin was a man That woked at the white house George Washington woked in The white house to But one H a r e t i e n c o m e p e o p e l was There
Generic Framework for a Phonics/Word Study Lesson

- Review/reread familiar text
- Phoneme awareness or listening task
- Introduce new correspondence pattern
- Provide guided practice with immediate feedback
- Vary the supervised, independent practice
- Spell pattern words and write sentences
- Read decodable text

Phoneme-Grapheme Mapping

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>wet</td>
<td>w</td>
<td>e</td>
<td>t</td>
</tr>
<tr>
<td>went</td>
<td>w</td>
<td>e</td>
<td>n</td>
</tr>
<tr>
<td>when</td>
<td>wh</td>
<td>e</td>
<td>n</td>
</tr>
<tr>
<td>wish</td>
<td>w</td>
<td>i</td>
<td>sh</td>
</tr>
<tr>
<td>witch</td>
<td>w</td>
<td>i</td>
<td>tch</td>
</tr>
</tbody>
</table>
Your Turn: Map These Words

| choose | | | |
| cape   | | | |
| wedge  | | | |
| purse  | | | |
| have   | | | |

Your Turn: Map These Words

| choose | ch | oo | se |
| cape   | c  | a  | p (e) |
| wedge  | w  | e  | dge |
| purse  | p  | ur | se |
| have   | h  | a  | ve |
How many words have these patterns?

<table>
<thead>
<tr>
<th></th>
<th>-ate</th>
<th>-ait</th>
<th>-eight</th>
<th>-aight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Brainstorm lists of words with each of these patterns.
### Familiarity with Orthographic Patterns Helps Speed Word Recognition

<table>
<thead>
<tr>
<th>-ate</th>
<th>-ait</th>
<th>-eight</th>
<th>-aight</th>
</tr>
</thead>
<tbody>
<tr>
<td>date</td>
<td>bait</td>
<td>freight</td>
<td>straight</td>
</tr>
<tr>
<td>fate</td>
<td>gait</td>
<td>weight</td>
<td></td>
</tr>
<tr>
<td>gate</td>
<td>wait</td>
<td></td>
<td></td>
</tr>
<tr>
<td>grate</td>
<td>strait</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>late</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>crate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Learning words with these patterns depends on phoneme awareness (/k/ and /t/ differ), orthographic awareness, and meaning.

### Words We Want Students to Read in Grades 1-2: What Pattern?

- grass, fell, miff
- gentle, germ, gymnast
- bridge, watch
- nose, rice, wage
- give, have, sieve
- find, sold, pint, post
- pepper, rabbit, mishap, napkin
### Syllable Spelling Conventions

<table>
<thead>
<tr>
<th></th>
<th>Closed</th>
<th>Open</th>
<th>VCe</th>
</tr>
</thead>
<tbody>
<tr>
<td>dap</td>
<td>ma</td>
<td></td>
<td>trite</td>
</tr>
<tr>
<td>con</td>
<td>wri</td>
<td></td>
<td>bune</td>
</tr>
<tr>
<td>bot</td>
<td>bu</td>
<td></td>
<td>tane</td>
</tr>
<tr>
<td>Vowel Team</td>
<td>Vowel-R</td>
<td></td>
<td>-Cle</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>var</th>
<th>ter</th>
<th>dor</th>
</tr>
</thead>
<tbody>
<tr>
<td>tain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sigh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>weigh</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Sort the Syllables

 wagon  carport  careful  airhead  cable

<table>
<thead>
<tr>
<th></th>
<th>Closed</th>
<th>Open</th>
<th>VCe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vowel Team</td>
<td>Vowel-R</td>
<td></td>
<td>-Cle</td>
</tr>
</tbody>
</table>
Sort the Syllables (Answers)

wagon  carport  careful  airhead  cable

Closed  Open  Vce
wag – on  ca  care

Vowel Team  Vowel-R  -Cle
air – head  car – port  -ble

Beware of Schwa!  /ə/

wag + on  at + tend
cir + cus  of + fend
trum + pet  re + duce
king + dom  sup + pose
cap + tain  ef + fect
Spelling by Syllable

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>WORD</th>
</tr>
</thead>
<tbody>
<tr>
<td>noc</td>
<td>tur</td>
<td>nal</td>
<td></td>
<td>nocturnal</td>
</tr>
<tr>
<td>ac</td>
<td>com</td>
<td>plish</td>
<td>ment</td>
<td>accomplishment</td>
</tr>
<tr>
<td>in</td>
<td>ter</td>
<td>nal</td>
<td>ize</td>
<td>internalize</td>
</tr>
<tr>
<td>pro</td>
<td>duct</td>
<td>ive</td>
<td></td>
<td>productive</td>
</tr>
</tbody>
</table>

Dividing Words into Syllables and Morphemes

<table>
<thead>
<tr>
<th>Syllable</th>
<th>Morpheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>trac-tor</td>
<td>tract-or</td>
</tr>
<tr>
<td>po-et-ry</td>
<td>poet-ry</td>
</tr>
<tr>
<td>u-ni-cy-cle</td>
<td>uni-cycle</td>
</tr>
<tr>
<td>gen-tle</td>
<td>gent-le</td>
</tr>
<tr>
<td>un-der-play-ed</td>
<td>under-play-ed</td>
</tr>
</tbody>
</table>
## Historical Layers of English

<table>
<thead>
<tr>
<th></th>
<th>Morpheme Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anglo-Saxon</strong></td>
<td>Compounds (yellowtail)</td>
</tr>
<tr>
<td></td>
<td>Inflections (-ed, -s, -ing, -er, -est)</td>
</tr>
<tr>
<td></td>
<td>Base words</td>
</tr>
<tr>
<td></td>
<td>Suffixes (-hood, -ward, -en)</td>
</tr>
<tr>
<td><strong>Latin</strong></td>
<td>Prefixes (ad, re, in, sub, pre)</td>
</tr>
<tr>
<td></td>
<td>Roots (dict, ject, vers, fer, port)</td>
</tr>
<tr>
<td></td>
<td>Suffixes (ion, ive, ity, ous, ful)</td>
</tr>
<tr>
<td></td>
<td>Latin plurals (alumni, alumnae)</td>
</tr>
<tr>
<td><strong>Greek</strong></td>
<td>Combining forms, plurals</td>
</tr>
<tr>
<td></td>
<td>(parenthesis, parentheses)</td>
</tr>
</tbody>
</table>

## Two Types of Suffixes

**inflections:**
- learned early
- do not change a word’s part of speech
- a fixed set or class of words
- change tense, number, and degree (-ed, -s, -er)

**derivations:**
- added to a root (usually from Latin)
- mark part of speech or grammatical role (*compare, comparison, comparative, comparatively*)
When I was Frightened,

When I was frightened, it was because when I was watching a scary movie that I had never seen before, I jumped. I was very frightened. I kept on jumping. That movie was very frightening to watch.

A terrible time when I was frightened was by me having nightmares. Nightmares are very frightening to have. I did not like my nightmare.

I also was frightened when I was walking home and it was by lots of trees and it was lightning. I was so frightened my teeth.

Sometimes things sound so frightening that you could jump out of your shoes. It had happened to me. Things that are frightening can scare you. But you will not do what happen to you.

Morphological Word Building

<table>
<thead>
<tr>
<th>Ion</th>
<th>ible</th>
<th>uring</th>
</tr>
</thead>
<tbody>
<tr>
<td>de</td>
<td>con</td>
<td>struct</td>
</tr>
<tr>
<td>in</td>
<td>s</td>
<td></td>
</tr>
<tr>
<td>ob</td>
<td>ed</td>
<td></td>
</tr>
<tr>
<td>re</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How Do We Read and Spell a Word Like Astronaut?

- astro – naut (morpheme)
- as-tro-naut (syllable)
- a-s-t-r-o-n-a-u-t (grapheme)
- a-s-t-r-o-n-a-u-t (letter)
- [ ā s t r ə n ȯ t] (phoneme)

What Happens in Non-SL Programs?

- Words are treated as visual strings of letters, without reference to the sounds, syllables, and morphemes represented in print
- Visual shape memory is emphasized, although it plays virtually no role in WORD reading (beyond visual acuity)
- The nature of orthographic memory and the role of phonology is not understood
Consider That You Can Read These

Mental graphemic images
Mental graphemic images
Mental graphemic images
Mental graphemic images

Mental graphemic images
MENTAL GRAPHEMIC IMAGES

Ubiquitous in Our Classrooms...
Words Are Not Recognized by Configuration!

Word Recognition Depends On Fast, Accurate, Speech-Print Mapping!
This Is Not Phonics Instruction…

O
one
once
only
out
open
on
off

E
eye
eat
end
every
even

Making Words: Fine for Students Who are Pretty Good Readers Already

i, u, k, m, n, p, p
up, in, ink/kin, pin, pun, pup,
pump, pink, mink, pumpkin

a, i, b, b, r, s, t
at, sat, rat, bat, bar, tar,
star, stir, stair, rabbits
By default, students are told to:

- Guess at unknown words from pictures and context
- Use “sounding out” as a last resort – although sounding out is not taught
- Read many words in leveled texts with patterns that have not been taught
- Spell by guesswork and invention
- Be satisfied with approximations that are incorrect
Materials for Preventative, SL Classroom Instruction

- Ladders to Literacy (O’Connor et al.)
- Road to the Code and Road to Reading (Blachman et al.)
- Phonemic Awareness in Young Children (Adams et al.)
- Phonological Awareness Skills Program (J. Rosner)
- Florida Center for Reading Research (online materials)
- Equipped for Reading Success (D. Kilpatrick)
- Phonemic Awareness: The skills that they need to help them succeed! (M. Heggerty)
- Sound-Spelling Cards and Kid Lips Pictures – Tools4Reading

Supplementary Phonics, Decoding, and Spelling – Sample Programs

- Phonics Boost and Phonics Blitz, Really Great Reading Company
- Fundations (Wilson)
- Phono-Graphix (McGuinness)
- SIPPS – Systematic Instruction in Phonics, Phonological Awareness, and Sight Words
- Phonics and Spelling Through Phoneme-Grapheme Mapping (Grace)
- Spelling by Pattern (Javernick & Moats)
Can We Change Predicted Outcomes? Yes!

- instruction
- professional development
- coaching
- programs
- assessment

Hartsfield Elementary School Progress Over Five Years

- Improved implementation of research-based comprehensive reading program
- Screening at beginning of first grade, with additional instructional intervention for those in bottom 30-40%

Proportion falling below the 25th percentile in word reading ability at the end of first grade:

<table>
<thead>
<tr>
<th>Year</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>31.8</td>
</tr>
<tr>
<td>1996</td>
<td>20.4</td>
</tr>
<tr>
<td>1997</td>
<td>10.9</td>
</tr>
<tr>
<td>1998</td>
<td>6.7</td>
</tr>
<tr>
<td>1999</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Average Percentile for entire grade (n=105):

- 1995: 48.9
- 1996: 55.2
- 1997: 61.4
- 1998: 73.5
- 1999: 81.7
“Defying the Odds”

Typical distribution of results (national, state, local)

Outstanding classroom, school, or district

Thank You!

For the work you are doing and for your participation in this session!

Louisa.moats@gmail.com
www.louisamoats.com
Contrasting Structured Literacy Approaches with Typical Literacy Practices

Fox Reading Conference
Tennessee Center for the Study and Treatment of Dyslexia
March 21st, 2020

LOUISE SPEAR-SWERLING, PH.D.
PROFESSOR EMERITA
SOUTHERN CONNECTICUT STATE UNIVERSITY
NEW HAVEN CT
Opening:
Paul’s Story

At right: Paul (1922 - 1999) with his younger sister Georgette, circa 1945.
Introduction: Key features of dyslexia

- Central problem: learning to decode and spell printed words
- Usually based in phonological processes
- Broad oral language comprehension typically average or higher
- Students’ broad intelligence also typically average or higher

(Fletcher, 2009; Fletcher, Lyon, Fuchs, & Barnes, 2019; Siegel, 1999; Stanovich, 2000)
Dyslexia involves an “unexpected” reading difficulty that is not primarily due to another disability or to experiential factors, such as English learner status, limited experience with language/literacy, or inadequate instruction.
Core deficit is relatively circumscribed but can have secondary effects on many areas, e.g., reading comprehension, written expression, content learning, motivation

Reading comprehension usually good in texts the student can decode well

Very common disability, 1 in 20 children even by more conservative estimates (e.g., Siegel, 2006)
Effective features of intervention for students with dyslexia

- Not a qualitatively different approach to intervention, but may need significantly more intensity
- More instructional time, smaller group size, more teacher scaffolding, more practice
- Highly explicit, systematic instruction in phonemic awareness, decoding, spelling, are key intervention needs

(Fletcher et al., 2019; Torgesen, 2004; Torgesen et al., 2001)
Ample practice reading texts is another key component of effective interventions (Kilpatrick, 2015; Vadasy, 2005)

Early identification/intervention important to good outcomes

Example: accuracy vs. fluency outcomes (Torgesen et al., 2001; Wexler et al., 2010)
These features of intervention are consistent with “Structured Literacy” (International Dyslexia Association, 2019).

Furthermore ...
Many poor readers have problems similar to those seen in dyslexia and can benefit from similar types of intervention.
Percentage of reading problems due partially or entirely to poor decoding across grade levels:

- Children identified as poor readers in K to Grade 3: 95% (Leach, Scarborough, & Rescorla, 2003)
- Children identified as poor readers in Grade 4 to 5: ~67% (Leach et al., 2003)
- Children identified as poor readers in Grades 5 to 8: 48% (Catts, Compton, Tomblin, & Bridges, 2012)
Poor readers with problems based entirely in comprehension rather than decoding may also benefit from the explicit teaching characteristic of SL approaches – for instance, in areas such as vocabulary and text structure (Kamil et al., 2008).
Dyslexia and other reading problems emerge in an educational context, often (not always) in the primary grades.

What kinds of typical literacy practices do many of these students experience, in these grades (and beyond)?
How is phonics often taught in typical literacy practices?

- Phonics usually included in instruction, but often not emphasized even for beginners
- In one popular reading program it is 1 of 8 areas taught, even in Grade 1
- Phonics teaching frequently not very explicit or systematic

(Hanford, 2019; Moats, 2017; Spear-Swerling, 2018)
Phonics in typical literacy practices (continued)

Example: children may be expected to read words with common vowel patterns (e.g., salt, fright, work), when they have not yet learned sounds for the relevant patterns (e.g., alt, igh, wor)

Example: children may be expected to spell words with common suffixes (e.g., flipped, shady) when they have not yet learned to spell the base word (e.g., flip, shade)
Example: there may be a heavy emphasis on “word walls” in which word patterns and word regularity vary greatly, so inferring phonics relationships is difficult
Sample Grade 1 “word wall” for the letter $b:$

- be
- been
- best
- big
- boy
- brother
- bird
Sample Grade 1 “word wall” for the letter b:

- be
- been
- best
- big
- boy
- brother

WHAT PATTERN?
- Open syllable, long vowel
- Irregular word
- Closed syllable with ending blend
- Closed single cons (CVC) word
- Vowel team (oy), not CVC
- Irregular word
- Vowel R word (ir)
Initial phonics instruction may heavily emphasize a large-unit approach such as “word families” (e.g., back, sack, pack, track, shack ...)

This approach does not foster close attention to letter sequences in words, a key habit for beginning readers to develop.

Also does not incorporate phoneme blending, an important skill.
A brief digression on different phonics approaches:

- **Analytic/analogy**: Initial focus is on analyzing whole words (often patterned words, e.g., decode stack by comparison to back, sack, shack)

- **Onset-rime**: Initial focus is on learning sounds for common onsets and rimes and how to blend them, e.g., st-ack, ch-ill, fl-ake

- **Synthetic phonics**: Initial focus is on learning grapheme-phoneme relationships and how to blend phonemes into whole words

- **Post-NRP research** favors explicit, systematic synthetic phonics (Brady, 2011; Christensen & Bowey, 2005)
In Structured Literacy approaches, phonics instruction generally uses an explicit, systematic, synthetic-phonics approach.
Example: to decode *shack*, learn sounds for the letter patterns *sh*, *a*, *ck*, and how to blend them

Instruction in phoneme awareness (e.g., phoneme blending and segmentation) also very important to include

As children progress beyond the earliest stages of reading, must teach larger units such as common vowel patterns (e.g., *ee*, *all*, *igh*), vowel with r (*ar*, *er*, *ir*), and common morphemes (e.g., *-ing*, *-ed*, *-ness*)
Explicit, systematic phonics teaching requires careful choices of practice examples for children

- **Example**: Some practice words for **decoding** CVC words with \(a\): tap, bag, sad, cab, hat, lap, rag

- For spelling, use same category but different practice words

- **Example**: Some practice words for **spelling** CVC words with \(a\): tag, nap, sat, mad, vat, sag, lab

- Teacher must filter out words like bay, car, jaw, and was

- Point is to develop decoding and encoding skill on **any regular CVC word**, not just whether the child can decode/spell **these particular words**
It is very difficult for educators to teach phonics well, particularly to large groups of children or those who struggle, without research-based phonics curricula and materials.

However, some schools do not provide teachers with these kinds of curricula.
Another problem in typical literacy practices involves the use of certain instructional activities that unintentionally confuse or mislead children about how to read unknown words.
One of the best examples of this problem involves the use of word configuration activities (word shapes).
WORD MANIA

WORD SHAPES

Word List
rag rat
pun pen
nap pin
pea rod
ran nit
nod ill

Directions: Write the spelling words in the correct boxes below.

scratch scrape spring
strange shred shrub

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 

thronr splash split

Graphics/clipart copyright DL Images.

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In English, word shape is completely useless for learning to decode or spell unknown words.
mob
aid
art
How would a word such as *art* be taught in an SL approach?

- This is a vowel-r word
- The pattern *ar* says /ar/
- Children blend /ar/, /t/ to produce “art”
- This approach helps children decode many other words with similar patterns and letter sounds
- For example: *art, ark, arm, bark, lark, smart, start, hard, farm, tar* …
- Repeated exposure to words with similar letter patterns builds automaticity
In typical literacy practices, instruction often relies on “three cueing systems” (MSV) models of reading.
The “Three Cueing Systems” (MSV) Model of Reading

- Based on the work of Goodman (1976), Clay (1994), and others
- Says that children become good readers by using multiple cues to read words
- Meaning cues
- Structural (syntactic) cues
- Visual/“graphophonic” cues (i.e., letter sounds)
- If children come to a word they cannot read when reading text, they are encouraged to use partial letter cues coupled with picture/sentence context, rather than looking carefully to decode
Examples of commonly taught three-cueing/MSV strategies for word reading:

- **Eagle Eye**  
  Spy it!  
  Use the picture

- **Lips Fish**  
  Start it!  
  Get your mouth ready for the first sound

- **Skippy Frog**  
  Skip it!  
  Skip the tricky word  
  Read to the end of the sentence  
  Hop back and read it

Decades of scientific evidence shows that good readers do not use “three cueing systems” to read words.

(e.g., Adams, 1998; Foorman et al., 2016; National Reading Panel, 2000; Stanovich, 2000)
Exchange observed by a paraprofessional in a Grade 1 classroom:

Teacher to class: “Maisie is such a good reader. She knows all her strategies!”

Maisie: “I do know ‘em, but I don’t use ‘em. When I see a word I don’t know, I just sound it out!”
Why does this matter?

- Encouragement to guess at words in decoding distracts children from close attention to the print.
- This is very problematic for developing skilled, fluent reading.
- Guessing based on context does not work well for advanced types of texts.
- Even if phonics is being taught well in one part of the reading curriculum, if children learn to guess at words when reading text, this will tend to undermine their reading progress.
Why does this matter? (continued)

- Guessing at words based on context cues can become a very hard habit to break (Foorman et al., 2016)
- Especially problematic for children with dyslexia and other decoding difficulties, because they have weak decoding and often are already inclined to over-rely on context cues
Example: Jesse, Grade 7

- Student with a history of preschool language delay (expressive language)
- Identified with SLD/dyslexia in Grade 1
- All oral language abilities in average range or higher since Grade 3
- Many years of Structured Literacy intervention, since primary grades
Jesse’s current (Grade 7) scores on WIAT-III (average SS = 85 to 115)

- Listening Comprehension SS = 108
- Oral Expression SS = 98
- Word Reading (real words) SS = 84
- Pseudoword Decoding (nonsense words) SS = 93
- Oral Reading Fluency (rate) SS = 89
- Oral Reading Fluency (accuracy) = 67
As is the case in many schools, typical literacy practices in Jesse’s school emphasized “three cueing systems” in text reading, and likely undermined the effectiveness of his SL program in phonics.
It is important to distinguish using context cues to decode words vs. to aid comprehension.
Mary has two cats. When they go to sleep, they like to **snuggle** up to each other.
A child cannot read the word *snuggle*. She uses the first couple of letters combined with the picture and/or sentence context to try to read the word. **This is using context to aid decoding.**

A child can read the text, including the word *snuggle*, but does not know what *snuggle* means. She uses sentence context and/or the picture to figure out what the word means (i.e., move into a warm, comfortable position). **This is using context to aid comprehension.**
Two different uses of context

Good readers do not rely heavily on context to aid decoding.

Good readers do use context to aid comprehension, e.g., to figure out unfamiliar word meanings or multiple meanings of words.
A related problem in typical literacy practices involves the types of texts that are used for children’s reading, especially in the early stages of learning to read.
What kinds of texts are used for beginners’ reading in typical literacy practices?

- Children are often placed for text reading in predictable leveled texts (Goldberg, 2019; Moats, 2017; Spear-Swerling, 2018)
- Texts contain many words that weak decoders are unable to decode
- Fosters a habit of guessing at words based on pictures or sentence context
- Weak decoders do not get opportunities to apply their decoding skills in text reading
From *Maria Goes to School*, Leveled Book A, Reading A-Z,
www.readinga-z.com/books/leveled-books/

(Site also has some very good decodables.)
I get my ruler.

I get my eraser.
I get my crayons.

I get my sweater.
In a Structured Literacy approach, beginning decoders would read texts that provide a good match to the decoding skills they have learned and that do not encourage guessing at words.
Example of a decodable text for beginning decoders, about early Grade 1 level (CVC words, all vowels).


This is a den.
The fox dug it into a hill.
Can you see into the den?
The fox has a cub.
The cub is red like his mom.

Frolic runs and jumps and flips and spins until he has to rest. Jen lifts him onto her lap.

She thanks Mom and Dad.

A kitten is the best gift Jen has ever had.
“Three cueing systems” (MSV) approaches may also influence scoring of assessments, especially informal assessments of children’s text reading.
Two different approaches to scoring text reading errors:

**Non-SL practices:** May overlook “contextually appropriate” errors such as *a* for *the*, *this* for *that*, *mom* for *mother*, etc.

These kinds of “miscues” viewed as unimportant because they do not greatly alter meaning

**Structured literacy approaches:** With very few exceptions, all word reading errors count

Exceptions: errors due to articulation, dialect, or foreign accent

Accurate text reading key for building fluency

“Minor” errors *do* affect comprehension (Daane et al., 2005)
Ignoring certain text reading errors in scoring assessments can provide a false picture of how well poor decoders are performing and may lead to faulty decision-making for these students.

(Jesse’s school thought he was doing great.)
Some instructional approaches popular in typical literacy practices make explicit, systematic instruction very difficult.
Instructional approaches that make explicit, systematic instruction difficult (continued)

- **Example**: “Reader’s Workshop”
- Includes some explicit instruction via “mini-lessons”
- Includes activities from which children can certainly benefit, e.g., work on language and partner work
- Heavy emphasis on children working independently and in different, self-selected texts (with teacher guidance)
- Teacher confers with students individually on reading/writing
Why is this a problem?

- Limited time for explicit teaching
- Model really does not lend itself to systematic teaching
- Not enough focused practice for weaker readers in a class
- Children will not necessarily choose optimal texts for their own learning
- If every child is reading a different book, challenging for the teacher to give more than superficial input during conferences or consistently recognize students’ misunderstandings of a text
May be hard to address higher level aspects of reading such as building background knowledge and inferencing, when there is not a shared set of texts to discuss.

Usually there is also a “three cueing systems” (MSV) emphasis (Student Achievement Partners, 2020)
Why is this a problem? (continued)

- Substantial amounts of classroom time often devoted to silent independent reading (Goldberg, 2019)
- Not a good use of classroom instructional time, especially for weaker readers in a class
Another important distinction to highlight:

- Encouraging **free-time** independent pleasure reading

  vs

- Devoting substantial amounts of **classroom instructional time** to silent independent reading
An important distinction (continued)

- Children can derive many benefits from independent pleasure reading, e.g., in fluency, vocabulary, and background knowledge (Mol & Bus, 2011; Stanovich, 2000)
- Teachers should certainly encourage this
- Provide ample choices of texts; make interesting and appropriate texts available, assign (and guide) independent reading as homework, encourage independent reading as a free-time classroom activity, develop book groups
An important distinction (continued)

- However, classroom instructional time is limited
- Students with dyslexia and other poor readers often need substantial amounts of explicit, systematic teaching to progress
- Many poor decoders also need to read text aloud with a teacher or partner; not yet ready for long stretches of silent reading
- Prioritizing a large block of instructional time to silent independent reading not a good use of time, especially for these students
Even if an important component of literacy is not fully included in a school’s instructional model or curriculum, standards such as the Common Core will ensure that it is still taught ... right?
Average number of minutes planned for specific components of literacy, in a planning task involving a two-hour ELA block (Grade 2-5 teachers, n = 68)

- Spelling = 5.2 mins
- Vocabulary = 4.8 mins
- Basic writing skills (punctuation, capitalization, sent struct) = 9.9 mins
- Writing processes = 0.7 mins
- Text composition (content) = 18 mins

(Spear-Swerling & Zibulsky, 2014)
High levels of teacher knowledge in Spear-Swerling and Zibulsky (2014) did predict time allocation plans that were more consistent with research.

Overall, however, many teachers planned to allocate time in ways not consistent with scientific recommendations, in writing as well as reading.
These results suggest that, in the absence of research-based curricula and materials, key components of literacy would be overlooked in instruction by many teachers.
Do some children learn to read well with typical literacy practices?

- Yes, some do.
- However, these kinds of practices are a very poor fit for students with dyslexia or other reading difficulties.
- Structured Literacy (SL) approaches are a much better fit for these students – and would undoubtedly have benefited my Uncle Paul.
- AND if features of SL were incorporated into typical literacy (Tier 1) instruction, they could benefit many students, not only those with dyslexia.
It is a myth that a knowledgeable, capable teacher can teach well using *any* method.
Teacher knowledge is very important, but instructional methods are also very important (Piasta, Connor, Fishman, & Morrison, 2009).

Teachers need instructional models, curricula, and materials that lend themselves to effective teaching.
We should give them the tools and professional development they need to reach all children, including those with dyslexia.
Thank you.

Contact information:
SPERSWERLL1@southernct.edu
Contrasting Structured Literacy Approaches with Typical Literacy Practices
Louise Spear-Swerling

Fox Reading Conference
Tennessee Center for the Study and Treatment of Dyslexia
March 21st, 2020

References


Torgesen, J. K. (2004). Lessons learned from research on interventions for students who have difficulty learning to read. In P. McCardle & V. Chhabra (Eds.), *The voice of evidence in reading research* (pp. 355-381). Baltimore, MD: Brookes Publishing Co.


Litarcy is the language of opportunity.

Children are at the heart of all we do.

We believe that every child has the right to read.

We know that 95% can be taught to read.

We believe that teachers—not programs or products—teach students to read, write and spell.

So we empower teachers with the best ways to teach.

Our Mission is to EMPOWER TEACHERS to ensure that every child learns to read by third grade.

Literacy How
Empower teaching excellence.
Session’s Objectives

Why we coach teachers
• Provide research on what teachers need to know and be able to do to teach their students to read
• Provide research on what their current knowledge is

How we coach teachers
• Explain what cognitive coaching is and how it is used to build teachers’ knowledge and use of evidence-based literacy practices
• Share some tools that are used to coach teachers (i.e., pacing guides, conference forms to support the coaching cycle, literacy protocols)

What we coach
• *The Science of Teaching Reading*: Knowledge, practice, and planning

Participants can expect to…

• Understand **why** teachers need to know the Science of Reading

   Learn **how** we coach teachers so they can apply the science of reading in their classrooms

• Hear about **what** the focus of our coaching is
Why does Literacy How exist?

- 95% of children can be taught to read (Torgesen, 2004)
- However, 65% of the Nation’s 4th graders read below grade level ([http://nces.ed.gov/nationsreportcard/naepdata/](http://nces.ed.gov/nationsreportcard/naepdata/))
- Teachers are typically not taught how to teach reading (Joshi et al., 2009; Brady et al., 2009; Cunningham et al., 2009; Spear-Swerling & Zibulsky, 2014, NCTQ Teacher Prep Reviews)
- However, teacher knowledge of effective literacy instruction strategies can override student disadvantages (Binks-Cantrell et al., 2012, Podhajski et al., 2009)
NAEP 4th Grade Reading Scores

SCALE SCORE

270
260
250
240
230
220
210
200

ASSESSMENT YEAR

'92
'96
'00
'04
'08
'12
'16
'18
'19

NAEP Advanced
NAEP Proficient
NAEP Basic

○ Nation (public) 
+ Tennessee 
--- Accommodations not permitted

How: Literacy How’s Coaching Model

Professional Development Outcomes

<table>
<thead>
<tr>
<th>PROFESSIONAL DEVELOPMENT ELEMENTS</th>
<th>KNOWLEDGE LEVEL</th>
<th>SKILL ATTAINMENT</th>
<th>TRANSFER TO PRACTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory (e.g., presenter explains</td>
<td>10%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>content—what it is, why it is</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>important and how to teach it)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstration (e.g., presenter</td>
<td>30%</td>
<td>20%</td>
<td>0%</td>
</tr>
<tr>
<td>models instructional practices)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practice (e.g., participants</td>
<td>60%</td>
<td>60%</td>
<td>5%</td>
</tr>
<tr>
<td>implement instructional practices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>during the session)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coaching (e.g., participants</td>
<td>95%</td>
<td>95%</td>
<td>99%</td>
</tr>
<tr>
<td>receive ongoing support and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>guidance when they return to the classroom)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Student Achievement through Staff Development (3rd ed. 2010)
Practice…practice…practice

“Research on effective school change has found that it takes an average of 20 to 25 times of trying a new method or technique before it becomes natural.”

Joyce, Bruce and Showers, 1988

---

Does Teacher Knowledge Matter?

- Link between teacher knowledge and student outcome has been demonstrated in a handful of studies, but these factors are moderated by implementation supported by coaching
  - McCutchen, Harry, Cunningham & Cox, 2002
  - McCutchen et al., 2002
  - Moats & Foorman, 2003
  - Carlisle & Berebitsky, 2011

- And many studies by Spear-Swerling, Washburn, Binks-Cantrell, Joshi, Piasta, A. Cunningham and others

Louisa Moats, Fox Conference
How Walpole and McKenna Define Coaching

“Coaching is a strategy for implementing a professional support system for teachers, a system that includes research or theory, demonstration, practice, and feedback.”


The Literacy How Mentor

Core principle:
Teaching is about thinking through your instructional practices. Why do you choose to use specific methods, techniques, and activities?

The LH Mentor supports the thinking process!
Mentor Characteristics

- Knowledgeable about the science of reading
- Expertise in working with struggling readers
- Skilled in design and delivery of PD
- Well-informed about core reading programs and how to integrate best practices as well as supplemental materials within the context of district curriculum and school improvement plan
- Expertise in working with adult learners (i.e., cognitive coaching)
- Life-long learner with an attitude of respect for the teaching profession.

Mentor Responsibilities: A Clearly Articulated Job Description

- Models lessons and supports teacher in implementation of research-based reading methods (gradual release method)
- Delivers monthly workshops to teachers
- Supports collection and analysis of data for differentiated instruction
- Meets with grade level team, including principal, weekly if possible but at least once a month

Why is the coach in the school and what is the purpose of the work?
Administrator’s Role

- Meets with the Mentor to fully understand the scope of the project
- Meets with the staff to explain the model
- Follow-up meeting with the staff for discussion
- **Appoints internal ‘Teacher Specialist’ to partner with the external mentor**
- Meeting with the Mentor and staff for initial introductions
- Provides release time for PD and data team meetings
- Attends PD in order to understand literacy at a deeper level and to conduct meaningful observations in classrooms (i.e., what to look for)

Literacy How Embedded Professional Development

Translates the *Science of Reading* into professional development and classroom practices to help teachers instruct reading more effectively.

Uses student data to drive and differentiate instruction with an eye to improving the efficacy of student assessment tools.

Creates “method-proof” teachers who can weigh the merits of the latest reading research, programs, and materials.
Literacy How Embedded Professional Development

Tailors professional development to meet the needs of individual schools, teachers, and students, and advises about key materials needed to supplement existing school curricula.

Provides a realistic roadmap to higher student achievement through scope-and-sequences with clear curricular goals that guide seamless delivery of reading instruction across grade levels.

Pacing Guide

Scope and Sequence for Phonetic/Morphemic Elements

<table>
<thead>
<tr>
<th>Phonetic/Morphemic Element</th>
<th>Spelling Stage*</th>
<th>Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LN</td>
<td>K</td>
</tr>
<tr>
<td>Consonants and Consonant Digraphs ((sh, ch, th, wh, ng))</td>
<td>LN</td>
<td>K</td>
</tr>
<tr>
<td>Short &amp; Long vowel sounds ((a, e, i, o, u))</td>
<td></td>
<td>K</td>
</tr>
<tr>
<td>Closed Syllables ((VC, CVC))</td>
<td>LN</td>
<td>K</td>
</tr>
<tr>
<td>Open Syllables ((CV)) ((y \text{ says long } i \text{ at the end of one-syllable words; } y \text{ usually says long } e \text{ at the end of multisyllable words}))</td>
<td>LN</td>
<td>K (one-syll. words)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gr. 2 (two-syll. words)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>K (one-syll. words)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gr. 3 and up (multisyllable words)</td>
</tr>
<tr>
<td>Identifies the base word in frequently occurring inflected forms ((e.g. looks, looked, looking))</td>
<td>LN</td>
<td>K/Gr. 1</td>
</tr>
</tbody>
</table>
5 Features of Effective PD

1. Focus on Content (how students learn the content)
2. Active Learning (teachers observe, receive feedback, and analyze student work)
3. Coherence: PD goals are aligned to the school curriculum and goals
4. Sustained duration: Ongoing throughout the year and beyond
5. Collective participation: Ts from one grade level participate together to build an interactive learning community

Desimone and Pak, 2017

Best Practices of Student-Focused Coaching

• Teachers must agree to be coached.
• Coaches are peers – that is, they do not supervise, judge or evaluate the teachers whom they work with.
• Coaches must first establish ‘a trusting and mutually respectful professional relationship.’ The teacher and coach ‘focus on partnering for student success.’

Hasbrouck, 2017
Progression of classroom modeling and coaching

• Mentor models lessons
• Team teach lessons
• Teacher does a lesson

Gradual Release of Responsibility
★ Progression cycles through the year as new learning takes place

Cognitive Coaching Cycle

Planning Conference
• Goals clarified
• Evidence chosen
• Strategies selected
• Self-assessment

Reflection Conference
• Guided self-reflection
• Evidence shared
• Conclusions for future

Classroom Observation
• Evidence gathered
• Strategies documented
Developing the School’s Literacy Plan

1. Conduct Needs Assessment (using data to drive the focus of the coaching and instruction)
   - District Literacy Scan
   - Literacy How’s School-level Survey
   - Review baseline literacy data
2. Meet with Principal to discuss results of the assessment
3. Identify teachers/grade levels who will receive coaching support and content focus for coaching
4. Identify teachers who will receive PD Series prior to being coached (in coaching pipeline)
5. Map out schedule for year including dates for PDs and data meetings (5 times/year)
Phase 1

1. Principal and LH Mentor meet with teachers to discuss the LH coaching model and school literacy plan.
2. Plan and implement data/RTI process.
3. Plan weekly meetings with administrator/point person
4. Partner with internal coach to build capacity.
5. Deliver monthly PD workshops (2 hrs/grade level).
6. Engage in weekly coaching sessions with teachers that follow a gradual release (I do, we do, you do) for each area of comprehensive literacy and include planning and reflection time.
7. **Focus on foundational skills (i.e., PA, Code) that emphasize meaning** (i.e., vocabulary and comprehension).

Phase 2

1. Review current literacy data to update the literacy plan.
2. Meet with teachers to discuss the LH coaching model and school literacy plan.
3. Continue to implement data/RTI process.
4. Plan weekly meetings with administrator/point person
5. Partner with internal coach to build capacity.
6. Deliver monthly PD workshops (2 hrs/grade level).
7. Engage in weekly coaching sessions with teachers that follow a gradual release (I do, we do, you do) for each area of comprehensive literacy and include planning and reflection time.
8. **Focus on comprehension** (i.e., vocabulary, syntax, text comprehension and written expression).
So...What is in powerful PD?

- Scientifically sound models of how we learn to read
- Comprehensive road maps for teaching all essential components, independent of programs
- How English language is structured at all levels
- Modeling and practice of structured literacy lessons

Louisa Moats, Fox Conference

Teacher knowledge is very important, but instructional methods are also very important (Piasta, Connor, Fishman, & Morrison, 2009).

Teachers need instructional models, curricula, and materials that lend themselves to effective teaching.

Louise Spear-Swerling, Fox Conference
Teacher Knowledge in all these content areas is crucial for teachers to be able to help all students maximize their literacy skills.
Teacher Knowledge also has to include knowledge about pedagogy: how to implement their content knowledge with students - where the rubber hits the road. And knowledge of fundamental competencies (explicit instruction, gradual release, etc.) in order to be able to implement their content knowledge.

Teachers need practice putting all this knowledge into action. We help them learn HOW to implement all this knowledge.

Planning
For planning, teachers need a road map (Scope and Sequence) and knowledge of where the students are (Assessing and RTI).

The Language Constraint on Writing Systems

Writing systems encode spoken language.

1. Spoken language encodes meaning but writing systems do not – spoken and written language systems are NOT parallel systems.
2. Learning how to read must involve learning how one’s writing system goes about encoding one’s spoken language.

*While the GOAL of reading is to obtain meaning, the goal of something is not the same as its essential nature.*

Perfetti, *The Universal Grammar of Reading*, 2003
The Acquisition of Language and Literacy Model©

- Mental Representations
- Spoken Language
- Written Symbols
- Listening Comprehension
- Speaking Composition
- Decoding (→Word Rec.)
- Encoding (Handwriting, Spelling, etc.)

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Teachers Change Brains!

- Memory/Comp.
- Speech
- Vision

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The Simple View of Reading

(Gough & Tunmer, 1986)

Listening Comprehension $\times$ Decoding $= \text{RC}$

© Literacy How, 2020
The Acquisition of Language and Literacy Model

The Literacy How Reading Wheel

The Core Components of Comprehensive Literacy Instruction

RC = Decoding × Listening Comprehension

Decoding (Word Rec.)

Written Symbols

Spoken Language

Listening Comprehension

Mental Representations

Speaking Composition

Encoding (Handwriting, Spelling, etc.)

Text Comprehension & Written Expression

Vocabulary & Morphology

Syntax Sentence-level skills

Phonemic Awareness

Phonics & Spelling

ORAL LANGUAGE AT THE CORE

www.literacyhow.com
## Comprehensive Literacy Instruction

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<tbody>
<tr>
<td>Phonemic Awareness</td>
<td>Phonemic Awareness</td>
<td>Foundational Skills (PA)</td>
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<td>Phonology</td>
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<td>Phonics</td>
<td>Phonics/Spelling</td>
<td>Foundational Skills (Phonics)</td>
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<td>Sound-Symbols Syllable Instruction</td>
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<td>Fluency</td>
<td>Syntax (in lieu of Fluency)</td>
<td>Foundational Skills/Language</td>
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<td>Syntax</td>
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<td>Vocabulary</td>
<td>Vocabulary and Morphology</td>
<td>Language/Foundational Skills</td>
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<td>Morphology Semantics</td>
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<td>Comprehension</td>
<td>Comprehension Written Expression</td>
<td>Reading Literature and Informational Text Writing</td>
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<td>Semantics</td>
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<tr>
<td>Oral Language</td>
<td>Speaking and Listening</td>
<td></td>
<td></td>
<td>All instruction is based on rich OL</td>
</tr>
</tbody>
</table>

### Science of Reading

1. Sounds first
2. Systematic approach of building sounds
3. Intentional coding of letter patterns to sounds
4. Absence of “cues” (MSV)
Phonological Awareness develops sequentially, so we begin where the student is in that progression.

**Activity: Syllable Inspectors**

<table>
<thead>
<tr>
<th>Closed:</th>
<th>VC</th>
<th>CCVC</th>
<th>CVCC</th>
<th>CV</th>
<th>CCVC</th>
</tr>
</thead>
</table>

- One (1) vowel, followed by
- One (1) or more consonants
- The **short** sound of the vowel

Teaching the vowel syllable patterns of English so students will know how to read single syllable *and* multisyllabic words.
One Teacher at a Time

“Teaching is one of the most cognitively complex professions... there is still uncertainty as to what works in various schools in diverse communities with each unique group of students... what makes teaching a profession is the continual inquiry, expansion of repertoire, and accumulation of knowledge through practice.”

Costa and Garmston, 2016

References


• Dillon, C. The Acquisition of Language and Literacy.

• Gillis, Margie & Eberhardt, Nancy. *Professional Learning Series*, 2018

References


• Kilpatrick, David. Essentials of Assessing, Preventing, and Overcoming Reading Difficulties, 2015.


• Spear-Swerling, Louise. The Power of RTI and Reading Profiles. Brookes Publishing.


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