

# The Society for Clinical Child and Adolescent Psychology (SCCAP): Initiative for Dissemination of Evidence-based Treatments for Childhood and Adolescent Mental Health Problems

With additional support from Florida International University and The Children's Trust.



# Keynote

## Evidence-Based Reading Intervention Research in K-12

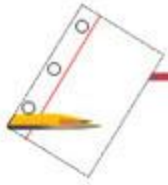
Barbara Foorman, Ph.D.

Francis Eppes Professor of Education  
Director, Florida Center for Reading Research  
Florida State University



# Take-home Message

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- Foundational skills in oral language and alphabets are crucial to reading success.
- Some predictors of reading comprehension are more malleable than others.
- Effective strategies for improving reading comprehension build on knowledge of how students learn.

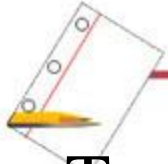
# Mapping Literacy Constructs to Measures



<b>Constructs/Measures</b>	<b>PreK</b>	<b>K</b>	<b>Gr 1</b>	<b>Gr 2</b>	<b>Gr 3-12</b>
<b>Oral Language</b>					
<b>Syntax</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Listening Comprehension (inferencing, attention/memory)</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Vocabulary (Expressive/Receptive)</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Alphabetic Knowledge (PA; LN/LS; decoding; encoding (spelling); fluency)</b>	<b>PA in K-1</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Reading Comprehension</b>		<b>(X)</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Written Response</b>	<b>name</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Prior Know; self-reg; motiv/engage</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>

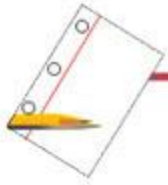
# Beginning Reading Instruction Requires

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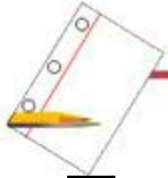
- Teach academic language skills
- Teach PA, LN, & LS, and practice blending to read simple words; “build” simple words
- Provide sequential, explicit instruction in letter-sound & sound-spelling patterns; teach high frequency regular & irregular words. Practice in isolation & in text
- Teach word analysis with syllable patterns and multiple syllables. Practice
- Provide daily text reading with & without feedback with attention to accuracy, fluency, & comprehension

# Teach Academic Language Skills



- 
- Have discussions that entail inferential language, including read-alouds.
  - Explicitly teach narrative language skills (e.g., how to summarize by retelling goal; conflict resolution; how to make logical predictions; modeling linguistic elements of narrative structure).
  - Teach academic language in the context of reading and/or listening activities.

# Develop Sound Segments & Links to Letters



- Teach recognition and manipulation of sound segments in speech.
- Provide explicit instruction in letter-sounds
- Use word building to link letter-sound relations with instruction in phonemic awareness

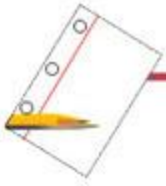
To build a CVC word: f\_n (make *fan*)

To build a CVCe word: f\_t\_ (make *fate*)

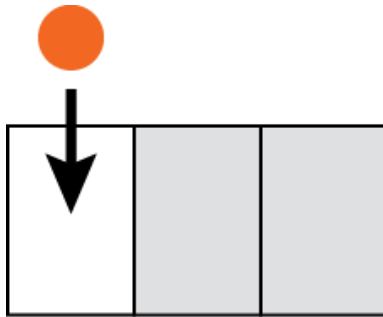
To build a CVCC word: fa\_\_ (make *fast*)

To build a CCVC word: f\_at (make *flat*)

# Elkonin Sound Boxes

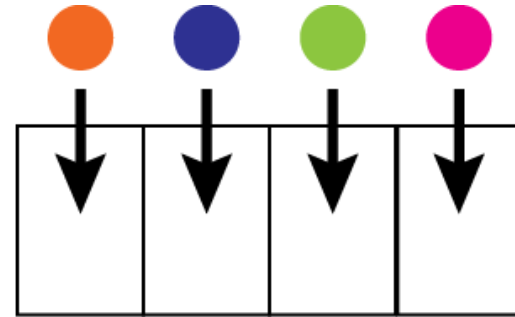


**PA without Print:**



for the word *sun*

**PA with Print:**

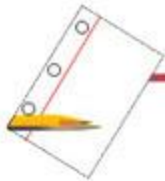


for the word *flat*

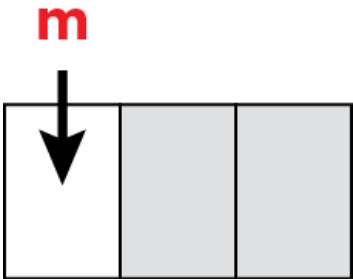




# Elkonin Sound Boxes: PA with Print

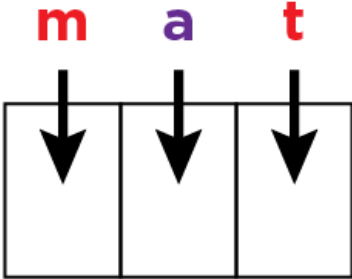


**Partial Sound Analysis with Print:**



for the word *mat*

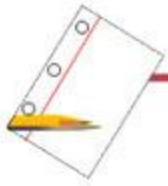
**Full Segmentation with Print:**



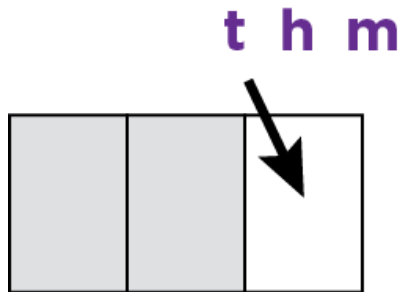
for the word *mat*



# Elkonin Sound Boxes: Mapping to Print

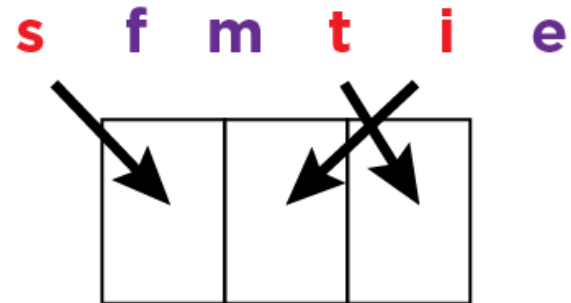


**Partial Sound with  
Limited Letter  
Choices**



for the word *sit*

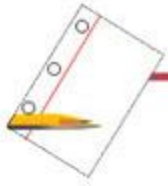
**Full Sound  
Segmentation;  
Limited Letter Choices**



for the word *sit*



# Elkonin Sound Boxes: Mapping to Print



**Write Correct Letter  
that Represents  
Each Sound**

s	i	t
---	---	---

h	e	n	s
---	---	---	---

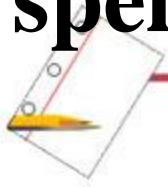
s	t	o	p
---	---	---	---



for the words *sit*, *hens*, and *stop*

# Sequential & Explicit Teaching of Sound-spelling Patterns & High Frequency Words

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- Blend LS to produce recognizable word
- Instruct in sound-spelling patterns
- Read decodable words in isolation & in text
- Teach high frequency words for quick recognition
- Teach nondecodable words essential to meaning of the text as whole words.



Front, smiley

**e**

see  
these  
me  
eat  
key  
happy  
chief  
either

**i**

sit  
gym

**a**

make  
rain  
play  
baby  
eight  
vein  
great  
they

**ɛ**

pet  
head

**ă**

cat

**ī**

time  
pie  
right  
rifle  
by  
buy  
heist

**ə**

about  
lesson  
elect  
definition  
circus

**ǔ**

cup  
cover  
flood  
tough  
among

**aw**

saw  
pause  
call  
water  
daughter  
thought

**ō**

vote  
doe  
boat  
snow  
open  
old  
go  
though

**oo**

took  
put  
could

**oo**

moo  
tube  
blue  
chew  
ruby  
suit



Back, rounded

**ir**

sir

**er**

her

**ur**

fur

**ar**

car

**or**

pour, or



Low, open

**oi/oy**

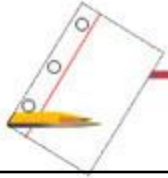
boy, oil

**ou/ow**

cow, out, bough

Moats (2010)

# High Frequency Words

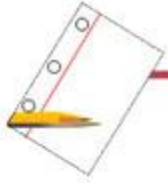


Irregular Words			Regular Words		
the	of	was	in	ask	down
to	from	they	and	best	draw
are	want	there	but	did	fall
he	said	friend	had	ate	never
a	his	come	at	eat	over
I	were	have	that	its	up
you	she	what	him	us	use

*Source: Dolch (1948)*

# Teach Word Analysis Strategies

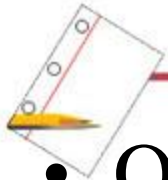
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- Explicitly teach advanced phonics patterns
- Show how multisyllabic words can be read by identifying pronounceable (as well as, meaningful) word parts in them.
- Provide time for students to write words that use the same sound-spelling patterns as they're learning in reading instruction. [And teach spelling conventions and word parts]

# Spelling Conventions

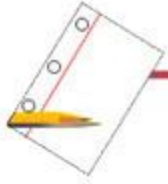
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- Orthographic rules for adding suffixes:
  - Consonant doubling (*planner; muddy; skipping* but *sadness*)
  - Dropping silent *e* (*rose + y = rosy*, but *grate + ful = grateful*)
- Change *y* to *i*: *try* → *tried*; *happy* → *happiness*; but *play* → *played* and *fly* → *flying*
- Contractions: *you 're*; *they 'll*; *aren 't*; *couldn 't*

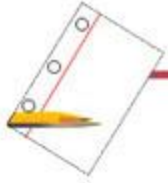


# Word Parts and Their Meanings



- Prefixes: *dis-*, *en-*, *fore-*, *in-*, *mis-*, *pre-*
- Grammatical/inflectional suffixes: *-s*, *-ed*, *-ing*, *-en*, *-er*, *-est*, *- 's*
- Basic roots: *agri* (*agriculture*); *aqua* (*aquarium*); *art* (*artist*); *cent* (*century*), *nav* (*navy*), *uni* (*unicorn*)
- Derivational suffixes: *-ful*; *-ly*; *-less*; *-ness*; *-y*

# Morphological Knowledge & Reading

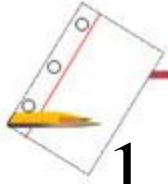


- Easiest to read: no shift from base to derivation (e.g., *suit* → *suitable*)
- Harder: one shift in phonology (*sign* → *signal*; *vine* → *vineyard*) or in orthography (*pity* → *piteous*; *try* → *tries*; *begin* → *beginning*; *proceed* → *procedure*; *secure* → *security*)
- Hardest: two shifts (*mature* → *maturity*; *theory* → *theoretical*)

(Carlisle & Stone, 2005)

# Read Text Daily with/without Feedback to Support Accuracy, Fluency, & Comprehension

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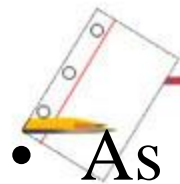


1. Choose texts, grouping formats, and routines that align with instructional goals. E.g., partner reading for fluency practice:

- First (better) reader reads the text
- Second reader corrects first reader's errors
- Two readers switch roles (at point determined by teacher)
- Second reader rereads same part of text
- First reader correct second's errors.

# Peer Assisted Learning Strategies

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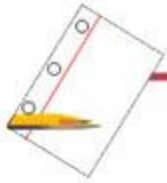


- As a supplement to core reading, PALS has helped K-6 graders improve their phonological awareness, phonics, fluency, and comprehension (e.g., Fuchs et al., 1997; Mathes et al., 1998)
- Teachers pair their students, creating dyads with one high and one low performing reader, and then train students to follow standard PALS procedures.

Increases students' practice time and opportunities to respond.

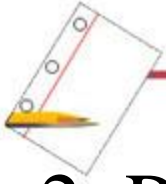
Offers structured and reciprocal practice on phonological awareness, phonics, fluency, and comprehension

# Choosing Texts, Formats, Routines



<b>Instructional Goal</b>	<b>Text characteristics</b>	<b>Grouping/Routines</b>
Listening Comprehension	Grade-level	Whole-class read aloud; T-Stu alternated reading; Choral reading in small group or with partner
Decoding/Word ID	Instructional-level	Indiv oral/silent reading; Small group or partners
Fluency	Instructional (+ challenging)	Indiv oral reading (with T, peer, or audio); partner turn-taking; T-Stu echo reading, alternated reading, or simultaneous reading in group
Independent reading practice	Independent (often familiar) text	Independent oral reading, with monitoring from T or more-able peer; Individual silent reading

# Text Reading (continued)



2. Provide modeling, scaffolding, & feedback, as students read orally, to support accurate & efficient word identification. Teacher gradually releases responsibility for reading to student.

## Sample Teacher prompts:

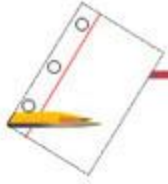
Do you see any patterns you know? [e.g., first syllable]

Sound it out. Start the word. Say the next sound. Go back and sound it out smoothly. Put all the sounds together.

Is there a silent *e* at the end of the word? What will this letter say?

You know this word part (-ing). Say the word part & read the word.

# Text Reading (continued)

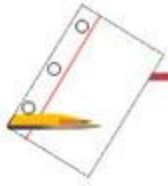


3. Teach students to self-monitor their understanding of the text and to self-correct word reading errors

Activity: the “Fix It” Game: T reads sentences and student(s) fix those that don’t make sense.

E.g.: “My black cat Max loves to ply.” Does that make sense? [Why? Fix it.]

# Text Reading (continued)



4. Provide opportunities for oral reading practice with feedback for the purpose of developing fluent and accurate reading with expression.

[Note: Fluent, accurate, reading with expression is usually a consequence of understanding what has been read.]



# Becoming a Skilled Reader

## LANGUAGE COMPREHENSION

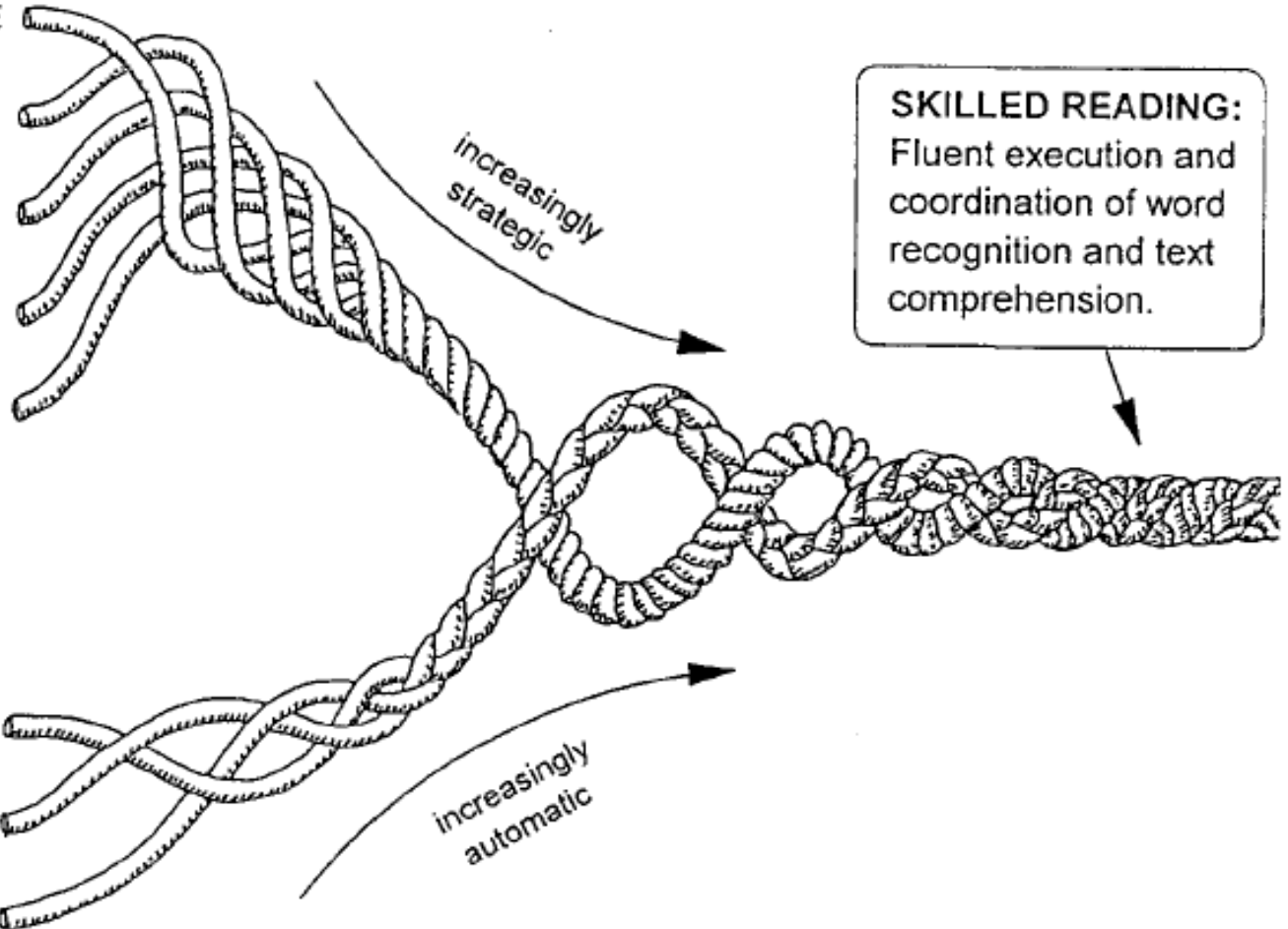
BACKGROUND KNOWLEDGE  
(facts, concepts, etc.)

VOCABULARY  
(breadth, precision, links, etc.)

LANGUAGE STRUCTURES  
(syntax, semantics, etc.)

VERBAL REASONING  
(inference, metaphor, etc.)

LITERACY KNOWLEDGE  
(print concepts, genres, etc.)



## WORD RECOGNITION

PHONOLOGICAL AWARENESS  
(syllables, phonemes, etc.)

DECODING (alphabetic principle,  
spelling-sound correspondences)

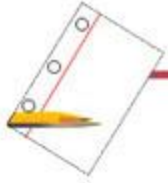
SIGHT RECOGNITION  
(of familiar words)

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

Scarborough, 2001

# Content Area Reading Instruction

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- Provide explicit vocabulary instruction
- Provide explicit comprehension instruction
- Provide opportunities for extended discussion of text
- Increase student motivation and engagement in literacy learning

(Foorman & Wanzek, in press)

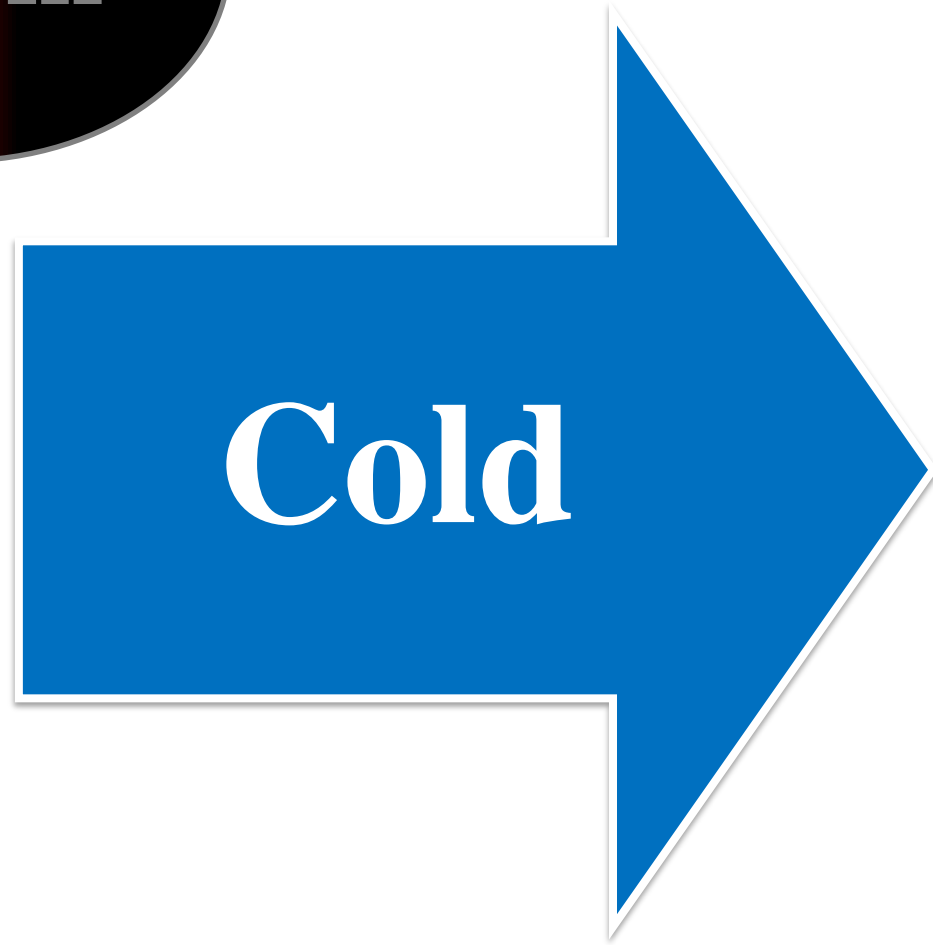
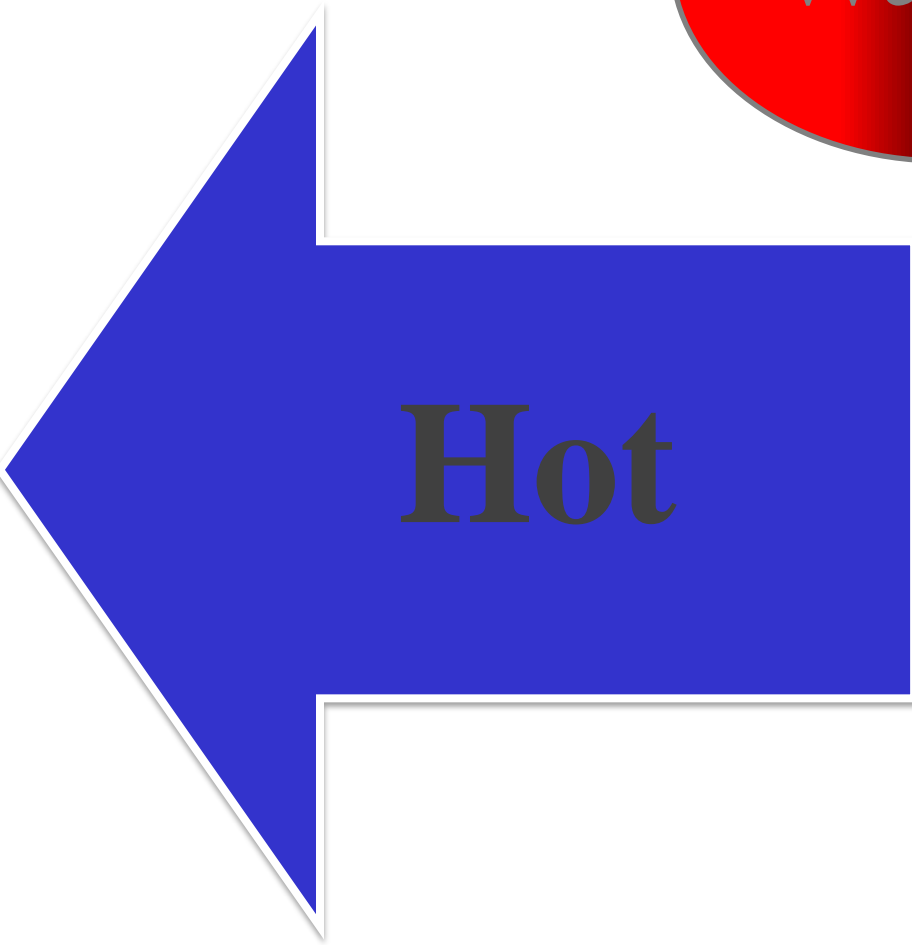
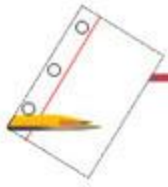
# Dimensions of Word Knowledge

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- Knowledge of word's spoken form (pronunciation)
- Written form (spelling)
- Grammatical behavior (syntactic/morphological features)
- Co-locational behavior (occurs with other words)
- Frequency (orally and in print)
- Stylistic register (e.g., academic language; informal)
- Conceptual meaning (antonyms, synonyms)
- Association with other words (inter-relatedness)

# Interrelatedness





# Thesaurus Entry: *Exacerbate*

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**Exacerbate** vb to cause to become increasingly bitter or severe <foolish words that only *exacerbated* the quarrel>

***synonym*** acerbate, embitter, envenom

***related*** annoy, exasperate, irritate, provoke; aggravate, heighten, intensify; inflame

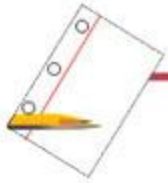
***idiom*** add fuel to the flame, fan the flames, feed the fire, pour oil on the fire

***contrasted*** appease, mollify, pacify, placate, quell; lessen, moderate

***antonym*** assuage

# Effective Reading Strategies

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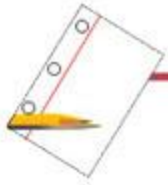


- Summarizing
- Generating questioning
- Organizing information in graphic organizers
- Inferential reasoning
- Visualizing
- Monitoring comprehension

**Model, meaningful practice, & feedback**

(WWC IES Practice Guide on RC; NICHD, 2000)

# 3 approaches to address reading comprehension difficulties (Clark et al., 2010)



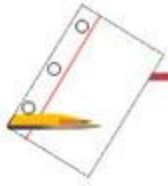
Random assignment to control or one of three interventions:

Text comprehension (TC)- inference training and reciprocal teaching

Oral language (OL)- listening comprehension and vocabulary

Combined approach (COM)- integrates text comprehension and oral language approaches

# Participants



- 84, 8-9 years olds with the greatest discrepancy between reading comprehension and reading fluency
- 23 schools - Yorkshire England
- Varying SES
- All taught in mainstream classroom



## Text Comprehension (TC)

## Oral Language (OL)



3 min



1.

5 min



2.

7 min



3.

5 min



4.

7 min



3 min

Introduction



Metacognitive Strategies



Reciprocal Teaching With Text



Inferencing From Text



Written Narrative



Plenary Session

Introduction



Vocabulary



Reciprocal Teaching With Spoken Language



Figurative Language



Spoken Narrative

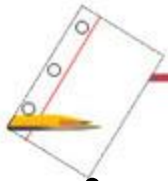


Plenary Session

Activities Largely Parallel

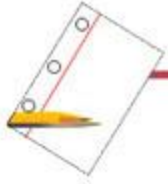
Activities Largely Parallel

# Results



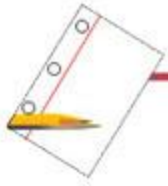
- All 3 intervention groups made significant improvements in reading comprehension relative to the untreated control group.
- Long term gains (11-mos follow-up) in reading comprehension were largest in the OL group!
- OL and COM groups also demonstrated significant improvements in expressive vocabulary compared to the control group and this was a mediator of the improved reading comprehension of the OL and COM groups.
- RC difficulties reflect at least partly oral language weaknesses that can be ameliorated by suitable teaching.

## From Barbara Tuckman's *The Zimmermann Telegram...*



The first message of the morning watch plopped out of the pneumatic tube into a wire basket with no more premonitory rattle than usual. The duty officer at the British Naval Intelligence twisted open the cartridge and examined the German wireless intercept it contained without noting anything of unusual significance. When a glance showed him that the message was in non-naval code, he sent it in to the Political Section in the inner room and thought no more about it. The date was January 17, 1917, past the halfway mark of a war that had already ground through thirty months of reckless carnage and no gain.

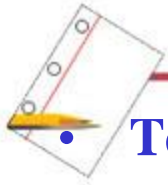
# What Makes This Text Difficult?



- Consider the text type and structure
- Consider prior knowledge
- Consider the vocabulary
- Consider the discourse features—linguistic markers for coherence, coreference, deixis
- Consider the inferences needed

# Instructional Considerations

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## • Text Type/Structure

persuasive text

- anti-war sentiment, “thirty months of reckless carnage and no gain”
- indictment of war bureaucracy

narrative structure

historical non-fiction

## • Prior Knowledge

World War I

- text references: war, 1917, British, German, duty officer

early 20<sup>th</sup> century communications

- text references: telegram, pneumatic tube, wire basket, wireless intercept

Zimmerman telegram

- text references: German wireless, non-naval code

TELEGRAM RECEIVED.

MAILED

Oct 1-8-58

W. W. Harrison, State Dept.

By *Mark A. Eckhoff Assistant*

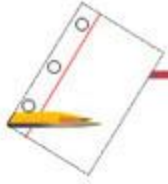
Date *Oct 27, 1958*

FROM 2nd from London # 5747.

"We intend to begin on the first of February unrestricted submarine warfare. We shall endeavor in spite of this to keep the United States of America neutral. In the event of this not succeeding, we make Mexico a proposal of alliance on the following basis: make war together, make peace together, generous financial support and an understanding on our part that Mexico is to reconquer the lost territory in Texas, New Mexico, and Arizona. The settlement in detail is left to you. You will inform the President of the above most secretly as soon as the outbreak of war with the United States of America is certain and add the suggestion that he should, on his own initiative, ~~invite~~ <sup>invite</sup> Japan to immediate adherence and at the same time mediate between Japan and ourselves. Please call the President's attention to the fact that the ruthless employment of our submarines now offers the prospect of compelling England in a few months to make peace." Signed, ZIMMERMAN.

# Questions for Discussion

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- Who was Zimmermann?
- What was the purpose of the telegram?
- What's the significance of it being in non-naval code?
- What did the British hope to achieve by showing this telegram to the United States?

# Instructional Considerations

(continued)

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## Vocabulary

academic language

- examined, significance, “ground through”

generative words

- premonitory, carnage, intercept

Tier 3 vocabulary (military domain)

- “morning watch,” non-naval code, German wireless, pneumatic tube

## • Linguistic Markers (Coherence Relations)

pronouns

- duty officer = he, him

co-references

- German wireless intercept = the message

deixis

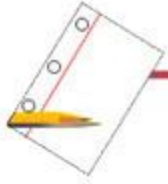
- “in the inner room”

chronology

- “When a glance showed him that the message was in non-naval code,...”



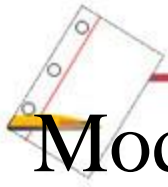
# Situation Model (Kintsch & Rawson, 2005)



The situation model for the Tuchman text requires knowledge of:

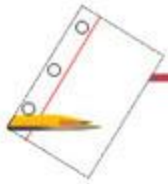
- a) The war Britain & Germany were engaged in during early 1917
- b) The ability to draw inferences about the relevance of a German message intercepted by the British and about the author's anti-war sentiment.

# Instructional Delivery



- Model strategies (activating background knowledge, questioning, searching for information, summarizing, organizing graphically, identifying story structure (e.g., Guthrie et al., 2004; Brown, Pressley et al., 1996))
- Keep the focus on the meaning of the text through high quality discussion.
- Model “thinking like an historian” (e.g., sourcing) to provide a purpose for reading (Biancarosa & Snow, 2004).

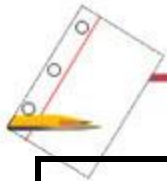
# What Counts as Evidence



- Mathematics: formal proof important
- Science: formal proofs; empirical observations and experimental data.
- History: multiple sources of evidence are sought and attention to author's perspective and purpose.

Knowledge of discipline affects comprehension monitoring and evaluation of author's claims.

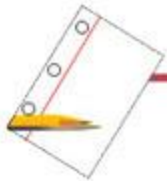
# Strategies for Teaching History



	<b>Who?</b>	<b>What?</b>	<b>Where?</b>	<b>When?</b>	<b>Why?</b>
<b>1</b>	Capt. James Cook	Reached farthest south yet--71° South Latitude	South Sea	1774	To map out the continent of Antarctica
<b>How connected to 2?</b> Cook didn't accomplish the task of mapping Antarctica, so someone else had to try.					
<b>2</b>	Fabian Gottlieb von Bellingshausen	Circumnavigated and sighted the Antarctic continent	South Sea	1820	Same as above
<b>How connected to 3?</b> Belingshausen didn't accomplish the task of mapping Antarctica so someone else had to try.					
<b>3</b>	James Ross	Reached land	Antarctica--South Sea	1840	Same as above.
<b>Summary: (Use cause/effect or other statements of the relationships among events).</b> Several explorers over a century of exploration attempted to map out the Continent of Antarctica, but it was difficult to do. Ross finally reached land, but the job still wasn't done.					

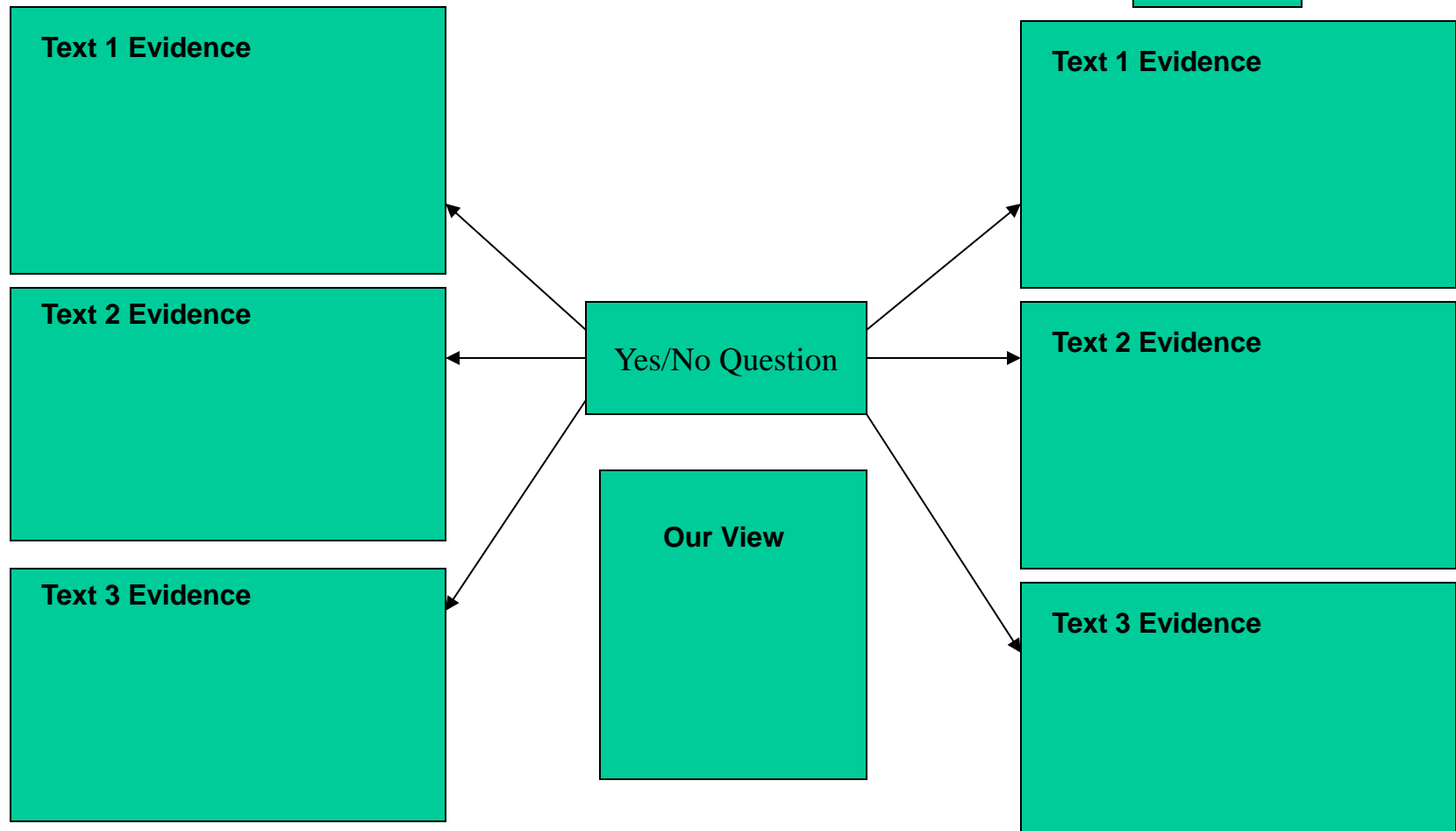
(T. Shanahan, 2013)

# Multiple Text Discussion Web

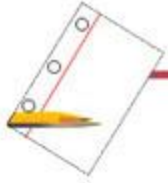


**YES**

**NO**



# Multiple Text Gist



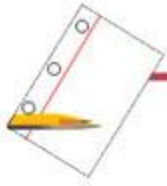
- Article Title \_\_\_\_\_
- Article Source \_\_\_\_\_
- 1. Read the article.
- 2. Describe the 5 Ws and H (Who, What, Where When, Why How)
- 3. Write a 20-word GIST. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Article Title \_\_\_\_\_
- Article Source \_\_\_\_\_
- 1. Read the article.
- 2. Fill out the 5Ws and H.
- 3. Write a 20-word GIST that incorporates the first article. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

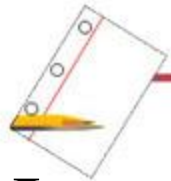
- ETC.

# How Students Learn (NRC, 2005)

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- 1: Engaging prior understandings
- 2: Essential role of factual knowledge and conceptual frameworks in understanding (novice vs. expert)
- 3: Importance of self-monitoring



# Enacting Design Characteristics

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In summary:

- Present students with “just-manageable difficulties”
- Identify a set of “enduring connected ideas”
- Make students’ thinking visible to both teachers and students (formative assessment)
- Inculcate habits of mind to assess own progress
- Establish classrooms as learning communities





*Thank you!*

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www.fcrr.org

For more information, please go to the main website and browse for workshops on this topic or check out our additional resources.

## Additional Resources

### Online resources:

1. Florida Center for Reading Research: [www.fcrr.org](http://www.fcrr.org)
2. Society of Clinical Child and Adolescent Psychology website: <http://effectivechildtherapy.com>
3. Institution of Education Sciences, Practice Guides: <http://ies.ed.gov/ncee/wwc/>
4. Center on Instruction: <http://www.centeroninstruction.org/index.cfm>

### Books:

1. Foorman, B. R., & Connor, C. (2011). Primary reading. In M. Kamil, P. D. Pearson, & E. Moje (Eds.), *Handbook on reading research* (Vol. 4, pp. 136–156). New York: Taylor and Francis.
2. Scanlon, D., Anderson, K., & Sweeney, J. (2010). *Early interventions for reading difficulties: The interactive strategies approach*. New York, NY: Guilford Press.

### Peer-reviewed Journal Articles:

1. Foorman, B., Breier, J., & Fletcher, J. (2003). Interventions aimed at improving reading success: An evidence-based approach. *Developmental Neuropsychology*, 24(2–3), 613–639.
2. Fuchs, D., Fuchs, L., Mathes, P., & Simmons, D. (1997). Peer-assisted learning strategies: Making classrooms more responsive to diversity. *American Educational Research Journal*, 34, 174-206.
3. Simmons, D., Coyne, M., Kwok, O., McDonagh, S., Harn, B., & Kame-ennui, E. (2008). Indexing response to intervention: A longitudinal study of reading risk from kindergarten through third grade. *Journal of Learning Disabilities*, 41, 158-173.
4. Williams, J.P., Brooke, S., Lauer, K., Hall, K., & Pollini, S. (2009). Embedding reading comprehension training in content-area instruction. *Journal of Educational Psychology*, 101(1), 1-20.

