



# Recent Research in Comprehension

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Adapted from: Research Related to Strengthening Instruction  
in Reading Comprehension: Joseph K. Torgesen

# Overview of the session

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1. The relations between reading fluency and reading comprehension
2. Vocabulary instruction and its connection to reading comprehension
3. Direct instruction in comprehension strategies as a means of improving reading comprehension

# The most important Reading First goals:

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1. Increase the percentage of students reading “at grade level” each year at each grade level from kindergarten through third grade
2. Decrease the percentage of students with serious reading difficulties each year at each grade level

The most important measures of “grade level” proficiency in reading are those that assess a student’s ability to comprehend the meaning of text



Helping students  
acquire the  
skills,  
knowledge, and  
attitudes  
required for  
proficiency in  
comprehension  
of text is the  
most important  
goal of reading  
instruction,  
**PERIOD.**





# What we know about the factors that affect reading comprehension

Proficient comprehension of text is influenced by:

Accurate and fluent word reading skills

Oral language skills (vocabulary, linguistic comprehension)

Extent of conceptual and factual knowledge

Knowledge and skill in use of cognitive strategies to improve comprehension or repair it when it breaks down.

Reasoning and inferential skills

Motivation to understand and interest in task and materials

# What should comprehension instruction be instruction of? - Mike Pressley

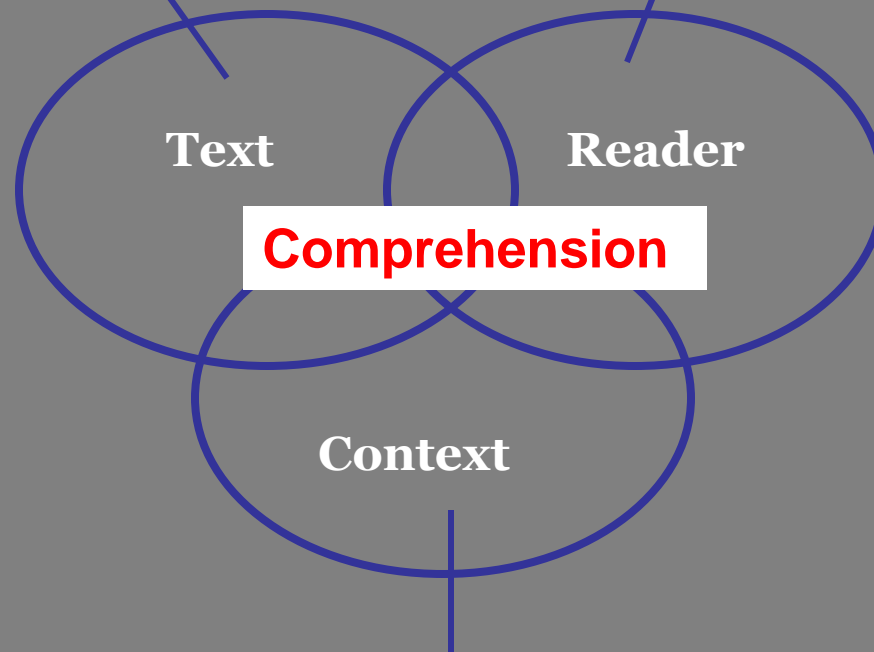
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1. Teach decoding skills
2. Encourage the development of sight words
3. Teach students to use semantic context cues to evaluate whether decodings are accurate
4. Teach vocabulary meanings
5. Encourage extensive reading
6. Teach self-regulated use of comprehension strategies

Pressley, M. (2000). What should comprehension instruction be the instruction of? In M.L. Kamil, P.B. Mosenthal, P.D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (vol. III, pp. 545–561). Mahwah, NJ: Erlbaum.

Text structure, vocabulary,  
print style and font,  
discourse, genre,  
motivating features

Word recognition,  
vocabulary, background  
knowledge, strategy use,  
inference-making abilities,  
motivation



Environment, purpose, social relations,  
cultural norms, motivating features (e.g.  
school/classroom climate, families,  
peers)



The role of vocabulary becomes increasingly important as students progress in school.

### First Grade

Vocabulary = 20%

ORF = 61%

### Second Grade

Vocabulary = 31%

ORF = 61%

### Third Grade

Vocabulary = 36%

ORF = 50%

### Seventh Grade

Vocabulary = 51%

ORF = 43%

### Tenth Grade

Vocabulary = 52%

ORF = 32%

## The most widely accepted definition of fluency

“Fluency is the ability to read text quickly, accurately, and with proper expression”

National Reading Panel

Fluency is the ability to read text quickly, accurately, and with good comprehension

Prosody is at least partially an index of comprehension...

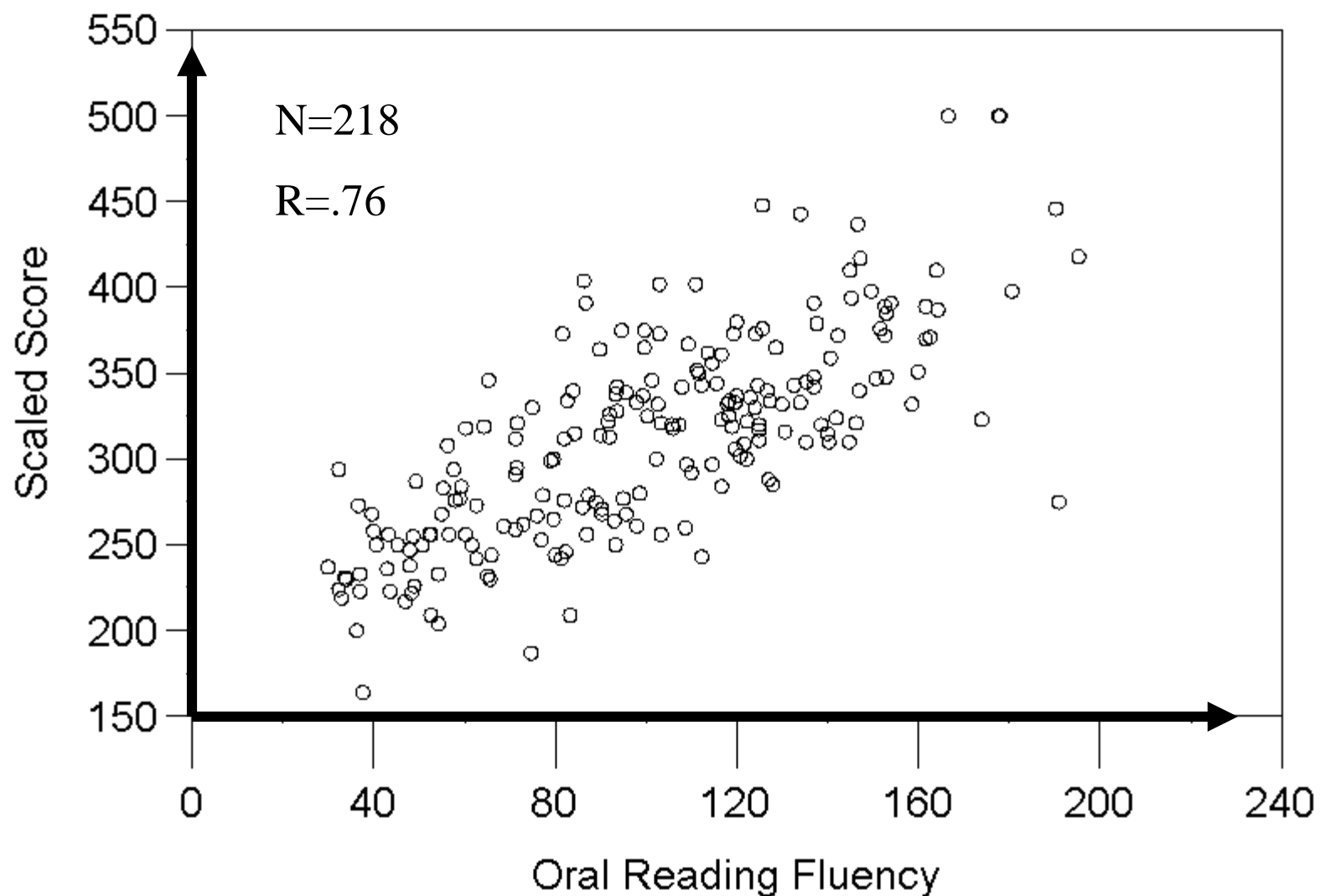
However, because it is difficult to measure both prosody and comprehension with a brief test on a large scale,

and because reading rate is strongly correlated with comprehension....

Most states have set their end-of-year targets, or benchmarks for reading fluency in terms of oral reading rate - the number of words per minute that can be read correctly on a grade level passage

Why is reading rate so strongly  
related to reading  
comprehension?

## Scatterplot of FCAT Reading and Fluency: Third Grade



Current research in reading development provides support for two ways in which individual differences in reading fluency are causally related to differences among students in reading comprehension

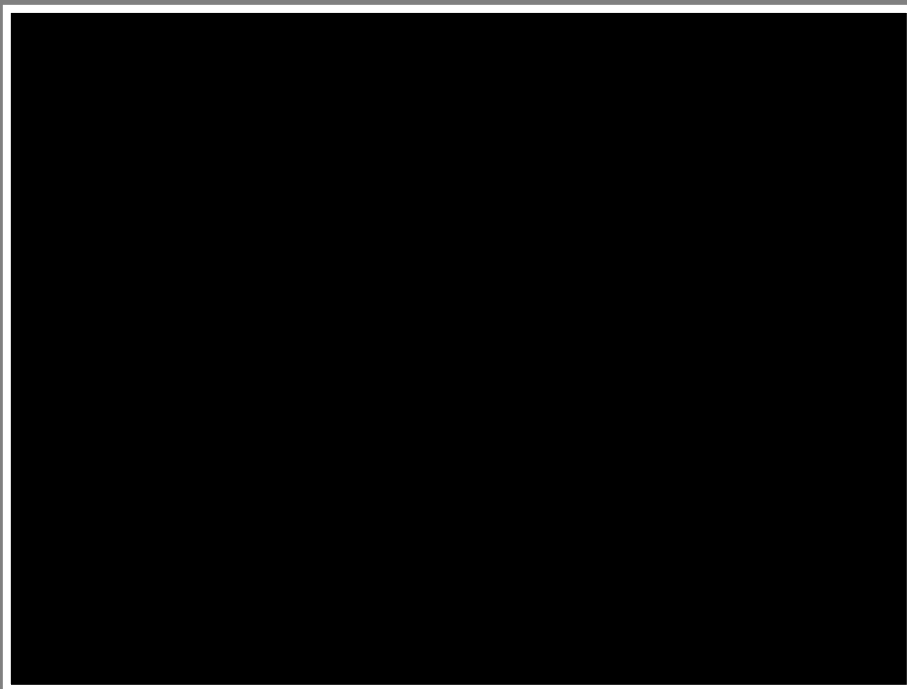
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Efficient, or automatic, identification of words allows the reader to focus more attention on the meaning of the passage

Comprehension processes themselves may cause individual differences in reading rate. These comprehension processes influence both fluency and comprehension tasks.

Jenkins, J.R., Fuchs, L.S., van den Broek, P., Espin, C., & Deno, S.L. (2003). Sources of individual differences in reading comprehension and reading fluency. *Journal of Educational Psychology*, 95, 719-729.






December, 3<sup>rd</sup> Grade  
Correct word/minute=60  
19<sup>th</sup> percentile

### The Surprise Party

My dad had his fortieth birthday last month, so my mom planned a big surprise party for him. She said I could assist with the party but that I had to keep the party a secret. She said I couldn't tell my dad because that would spoil the surprise.

I helped mom organize the guest list and write the invitations. I was responsible for making sure everyone was included. I also addressed all the envelopes and put stamps and return addresses on them.....



December, 3<sup>rd</sup> Grade  
Correct word/minute=128  
78<sup>th</sup> percentile

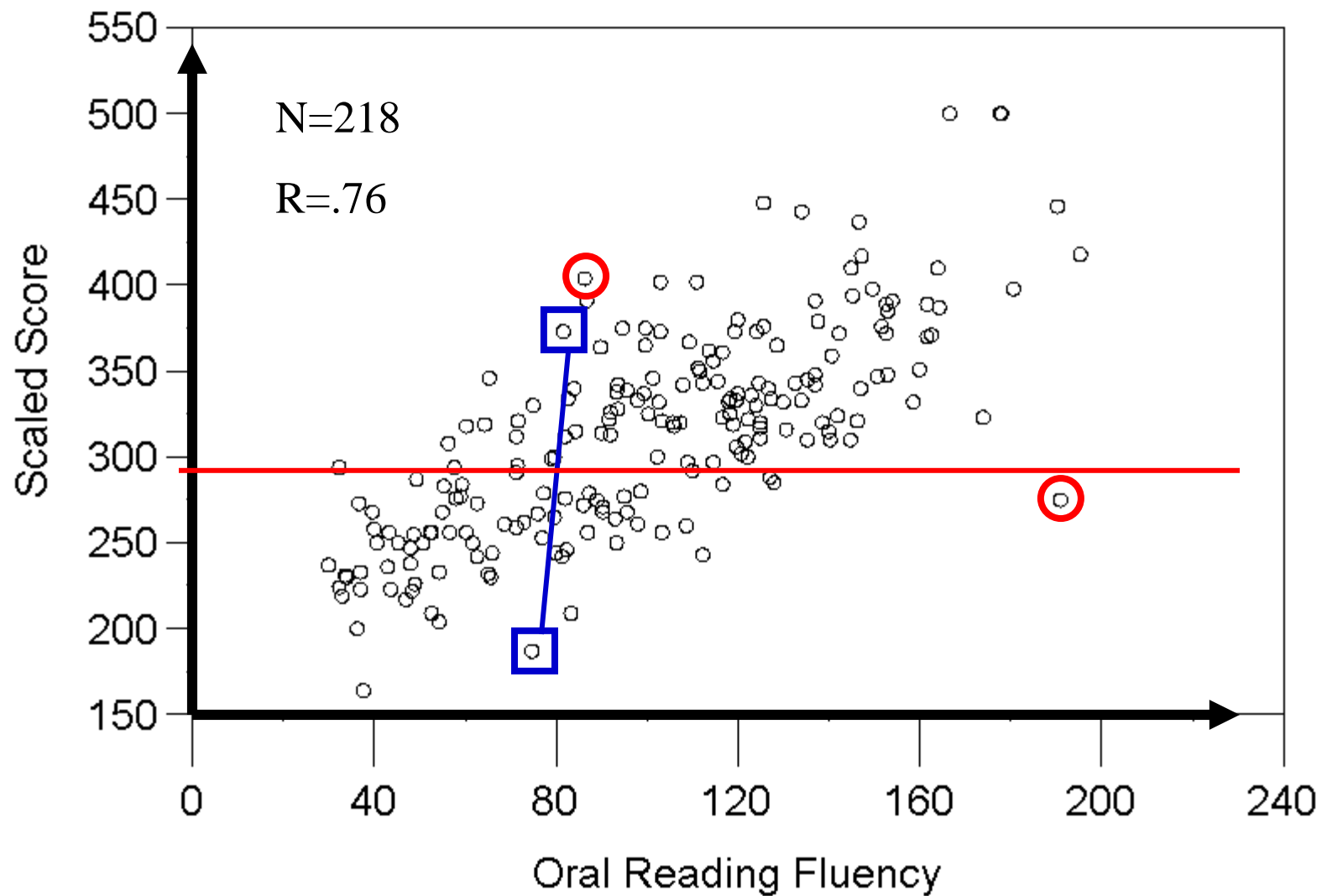
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How much fluency (rate) is enough to  
facilitate good reading comprehension?

## Scatterplot of FCAT Reading and Fluency: Third Grade



How much fluency (rate) is enough to facilitate good reading comprehension?

## DIBELS Benchmarks

1<sup>st</sup> Grade – 40 correct words per minute

2<sup>nd</sup> Grade- 90 correct words per minute

3<sup>rd</sup> Grade – 110 correct words per minute

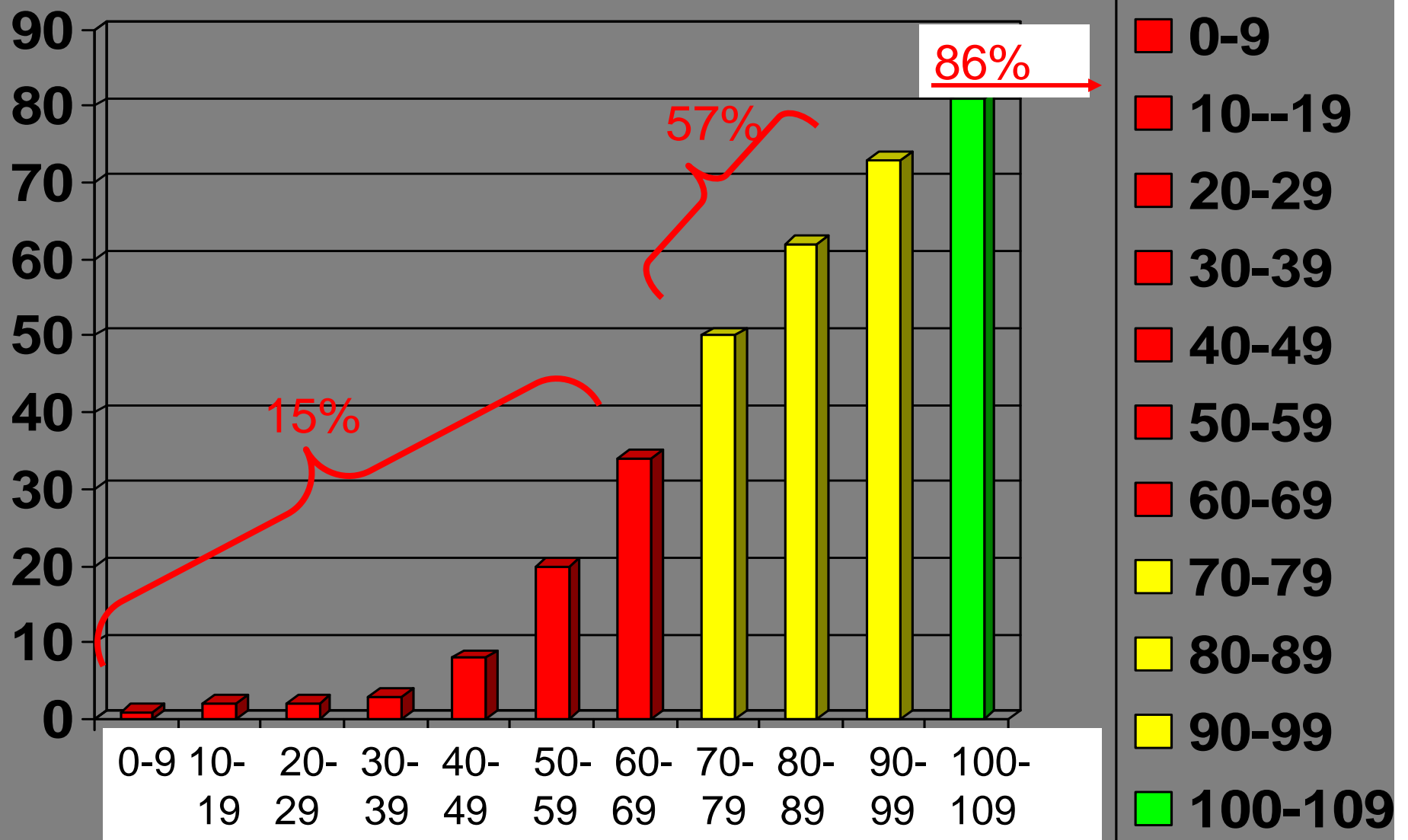
How were these benchmarks established?

They were set empirically at a level that insured a high probability (approx. 80%) of success on measures of reading comprehension

# Relationship of performance levels on ORF to other student characteristics 3<sup>rd</sup> Grade

ORF level correlation with:  
 Vocabulary = .99  
 %FR lunch = -.97  
 %Minority = -.97  
 % ELL = -.96

A3 ORF	Mean PPVT	% Minority	% FRL	% ELL
0-9	69.9	83%	88%	36%
10-19	75.7	81%	85%	30%
20-29	84	79	84	23
30-39	84.3	79%	85%	24%
40-49	87.1	78%	84%	21%
50-59	88.5	77%	82%	18%
60-69	90.3	76%	80%	16%
70-79	92	74	78	15
80-89	94.1	72%	75%	12%
90-99	95.6	72%	74%	12%
100-109	97.8	69%	71%	11%
110-119	99.8	68%	68%	9%
120-129	100	67	68	9
130-139	106.5	58%	57%	5%
140-149	109.2	57%	51%	4%
150-159	111.5	50%	47%	2%
160-169	112.5	55%	56%	1%
170-179	113.8	49%	48%	6%
180-189	117.8	48%	46%	5%
190-199				
200+				

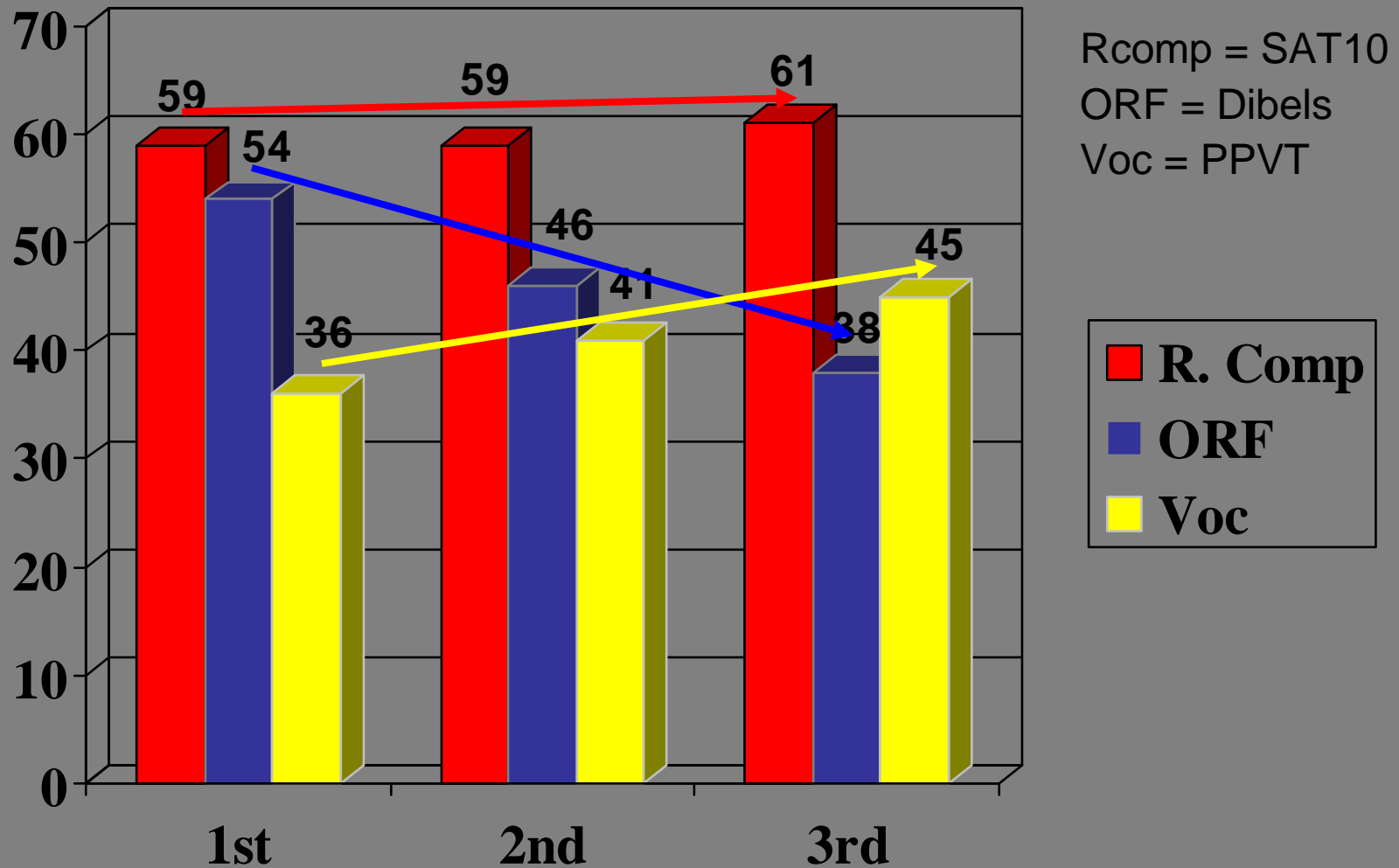


Percent of students performing at grade level and above on the FCAT at various levels of performance on Oral Reading Fluency-Assessment 3 (Feb) in Florida)

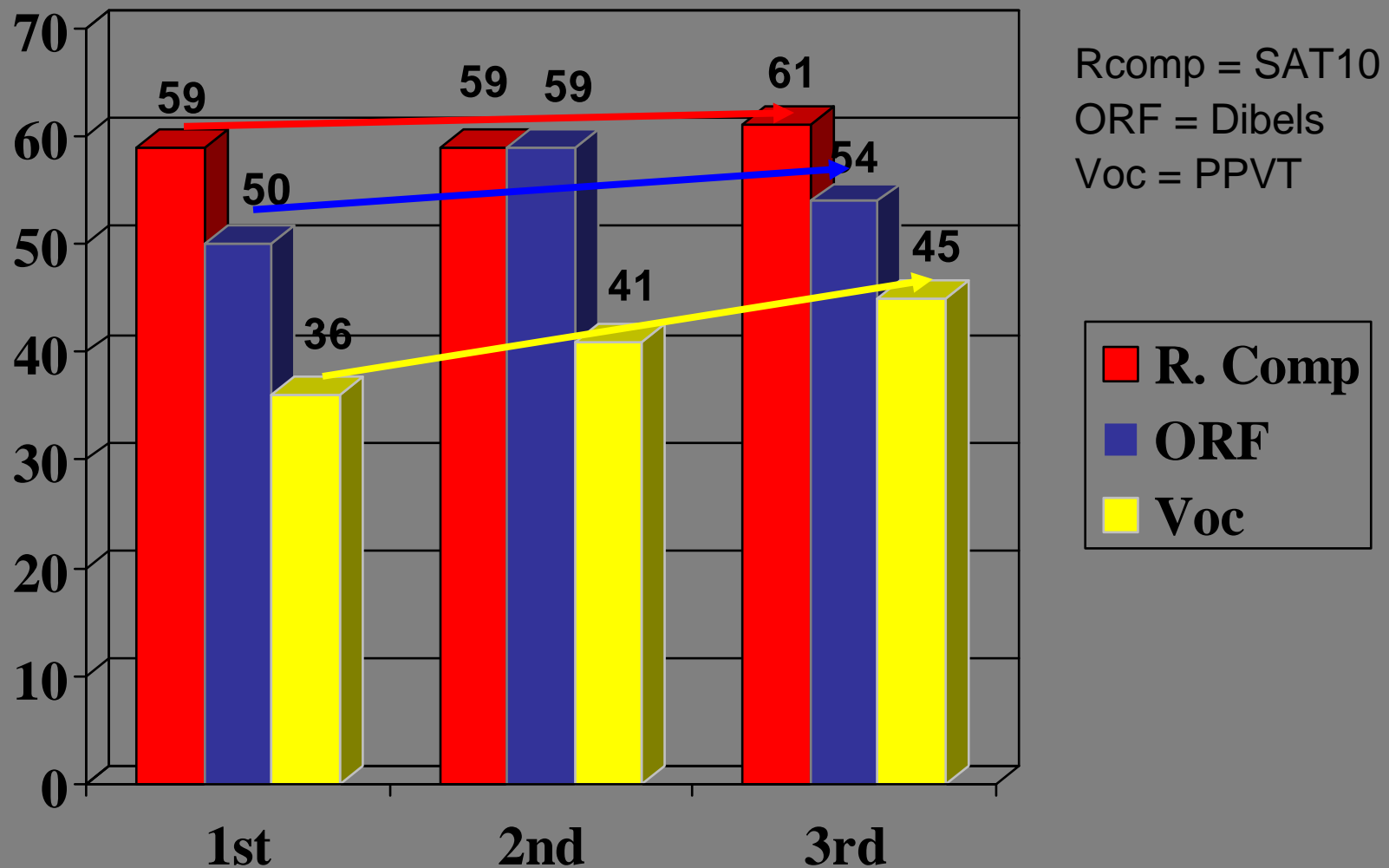


If target for oral reading fluency was set at the 40<sup>th</sup> percentile and above, what would the end-of-year “benchmarks” be?

	<u>DIBELS norms</u>	<u>H&amp;T norms</u>	<u>Aimsweb norms</u>
1 <sup>st</sup>	45wpm	43wpm	45wpm
2 <sup>nd</sup>	91wpm	79wpm	85wpm
3 <sup>rd</sup>	110wpm	96wpm	102wpm



Percent of Students at “grade level” in Reading Comprehension, Oral Reading Fluency, and Oral Vocabulary in grades 1-3



Percent of Students at “grade level” in RC, ORF, and Vocab in grades 1-3 using Hasbrook and Tindal ORF norms and 40<sup>th</sup> percentile as goal

# What are the big ideas that should guide our work to build reading fluency in young children?

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Reading First students need powerful instruction in strategies for accurate word identification (phonemic decoding) in first grade and extending into complex skills in second grade.

Children must become accurate readers as a first step toward becoming fluent readers.

Reading first students need many opportunities to acquire sight word representations for high frequency, high utility words – working to expand student’s “sight word vocabulary” as fast as possible

Supervised, repeated reading practice is one efficient way to do this – direct “sight word” practice for very low readers

# What are the big ideas that should guide our work to build reading fluency in young children?

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Reading First students should be encouraged to attend to meaning in all their reading assignments

Encouraging students to read with prosody will lead them to attend to meaning

Encouraging students to check the accuracy of their decoding attempts with unfamiliar words by asking if their initial guess “makes sense” in the context of the sentence will lead them to attend to meaning.

Repeated practice in reading for meaning supports the growth of “automatic comprehension processes” which are important for both fluency and comprehension

Lets now turn to Vocabulary...

# The topics to be discussed

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1. What is the nature of the relationship between vocabulary and reading comprehension?
2. How many words do children need to know?  
The instructional challenge for Reading First schools
3. What do we know from research about the best ways to teach vocabulary?
4. An important, unresolved issue about effective approaches to vocabulary instruction in Reading First schools



# Some Definitions and distinctions....

Vocabulary – knowledge of words and word meanings

## Complications:

Oral vs. written

Receptive vs. expressive

Breadth, Depth, Fluency

## Confusions:

Sight word vocabulary as in words students can recognize by sight

Vocabulary as in words that students know the meaning of.

## What is a “sight word”?

“Sight words are words that readers have read accurately on earlier occasions. They read the words by remembering how they read them previously. The term sight indicates that sight of the word activates that word in memory, including information about its spelling, pronunciation, typical role in sentences, and meaning” (Ehri, 1998)

“ Sight of the word activates its pronunciation and meaning in memory immediately without any sounding out or blending required. Sight words are read as whole units with no pauses between sounds” (Ehri, 2002))

# Levels of Word Knowledge

(Stahl, 2003)

- I never saw it before
- I've heard of it but I don't know what it means
- I recognize it in context—it has something to do with...
- I know it.

# A comment on the relationship....

“Of the many compelling reasons for providing students with instruction to build vocabulary, none is more important than the contribution of vocabulary knowledge to reading comprehension. Indeed, one of the most enduring findings in reading research is the extent to which students’ vocabulary knowledge relates to their reading comprehension.”

Lehr, F., Osborn, J., Hiebert, E.H. (2004). Focus on Vocabulary, San Francisco: Pacific Resources for Education and Learning.

# From the report of the National Reading Panel....

“...reading comprehension is a cognitive process that integrates complex skills and cannot be understood without examining the critical role of vocabulary learning and instruction and its development...”

# How does vocabulary contribute to the acquisition of reading comprehension?

The obvious way – knowing the meanings of the words in text is necessary to understand the message being conveyed.

Other probable, less obvious ways --

Vocabulary contributes to the development of phonemic awareness (Metsala, 1998)

Vocabulary contributes more accurate decoding of words whose printed form is unfamiliar (Ehri, 2002)

Vocabulary contributes to reading fluency because it leads to more accurate reading practice

# The impact of vocabulary instruction on reading comprehension

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1. Stahl & Fairbanks (1985) report an effect size of .97 for comprehension of passages specifically containing words that were taught
2. They also report an effect size of .30 for effects on standardized measures of reading comprehension.

Effects of vocabulary instruction on reading comprehension in the primary grades will likely be relatively modest

# The challenge of vocabulary instruction for Reading First schools

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1. Biemiller (2005) found that average students knew about 6,000 root words by end of 2<sup>nd</sup> grade
2. Students in lowest quartile knew about 4,000 words
3. Students in lowest quartile enter kindergarten knowing between 2000 and 2500 words, so must learn 3500 to 4000 words to “close the gap”
4. Currently, lowest quartile students learn about 500-600 words a year
5. Must add another 500 words a year to even approach “closing the gap”



# The challenge of vocabulary instruction for Reading First schools

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“To have a useful impact on vocabulary growth, an intervention would need to add several hundred root word meanings per year. This is considerably more meanings than are presently addressed in classroom programs.”

“Until schools are prepared to emphasize vocabulary acquisition, especially in the primary grades, less advantaged children will continue to be handicapped even if they master reading written words”.

Biemiller, A. & Boote, C. (2006). An effective method for building meaning vocabulary in primary grades. *Journal of Educational Psychology*, 98, 44-62.

# What do we know from research about the best ways to teach vocabulary?

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## Primary conclusions from report of NRP (2000)

1. Vocabulary should be taught both directly and indirectly
2. Repetition and multiple exposures to vocabulary items are important
3. Learning in rich contexts is valuable for vocabulary learning
4. Vocabulary learning should entail active engagement in learning tasks
5. Dependence on a single vocabulary instructional method will not result in optimal learning

# Conclusions from Stahl and Fairbanks meta-analysis across grades

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## Major conclusions:

1. Methods don't always have the same impact on reading comprehension as they do on performance on a vocabulary measure
2. Methods that provide a balance of definitional information and experience with words in multiple contexts provide a consistently strong impact on both vocabulary and comprehension performance
3. Depth of processing did not impact performance on vocabulary tests, but did effect generalization to reading comprehension

# Conclusions from Stahl and Fairbanks meta-analysis across grades

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## Major conclusions (cont):

4. Amount of time devoted to instruction of each word had much less of an impact on performance on vocabulary tests than on reading comprehension, where it was significant.
5. Methods that provide only definitional information about words do not produce a reliable impact on comprehension—nor do methods that provide only one or two exposures to words in context.

Current research indicates that the kind of vocabulary instruction that is most likely to have an impact on reading comprehension involves:

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Providing both definitional information about words and experience accessing their meaning in multiple contexts

Total amount of time spent learning words has an impact on reading comprehension – more exposures rather than fewer

It is also helpful to require students to actively work with words, use in sentences, redefine, classify, etc.

## The currently unresolved issue:

For very young children (K-2) with limited vocabulary (bottom quartile), is it better to teach many word meanings briefly, or a few words more intensively?

Remember, young poor children enter schools with vocabularies substantially smaller than their middle-class peers

Students with smaller vocabularies have more difficulties learning word meanings from context than students with larger vocabularies

Poor students have a very large word knowledge gap to overcome if they are to be prepared for reading comprehension in 3<sup>rd</sup> grade and later.

## Background for an extended research example:

If young children are introduced to many word meanings briefly in K-2, can they use this initial knowledge to further build word knowledge through reading?

The concept of “fast mapping” (Cary, 1978)

Direct, brief explanation of meaning can establish initial “fast mapping” of meaning

As initially mapped words are encountered in other contexts, their meaning is extended and deepened.

## Practical implications....

If 41% of taught words are learned, to acquire 400 new word meanings, 1000 would need to be taught. This is 25 per week.

Biemiller & Boote recommend teaching many words briefly in K-2 for three reasons:

- Different children know different meanings

- Initial explicit learning may allow students to extend word knowledge as they encounter taught words in other contexts – profit from context

- Other methods, involving more intensive instruction, do not begin to address the size of the gap



## Questions for further research...

What words should be taught in grades K-3?

Can high rates of word learning be sustained over time?

Does brief teaching of large numbers of word meanings in primary grades produce increased reading comprehension in grades 3 and 4?

What are the best methods of vocabulary instruction for students of different ages and abilities?

What are the best ways to measure vocabulary growth?

# An overview of major topics to be covered

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1. The relations between reading fluency and reading comprehension
2. Vocabulary instruction and its connection to reading comprehension
3. Direct instruction in comprehension strategies as a means of improving reading comprehension

# Definitions of Reading Comprehension

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“intentional thinking during which meaning is constructed through interactions between text and reader.” Durkin (1993)

“the construction of the meaning of a written text through a reciprocal interchange of ideas between the reader and the message in a particular text.” Harris & Hodges, 1995

meaning arises from the active, deliberate thinking processes readers engage in as they read.

# Definitions of Reading Comprehension

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## Said concisely:

“reading comprehension is thinking guided by print”

Perfetti 1995

## Said not so concisely but more completely:

“the process of simultaneously extracting and constructing meaning through interaction and involvement with written language. It consists of three elements: the reader, the text, and the activity or purpose for reading”

Rand Reading Study Group, 2002

# Summary: a research-based view of reading comprehension

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Reading comprehension involves active mental effort to construct meaning

Good readers use prior knowledge, information in text, and thinking/reasoning processes to construct new knowledge and understanding



# Evidence for instruction in comprehension strategies comes from three sources:

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1. Proficient readers monitor their comprehension more actively and effectively than less proficient readers
2. Proficient readers are more likely to use a variety of active cognitive strategies to enhance their comprehension and repair it when it breaks down
3. Explicit instruction along with supported, scaffolded practice in the use of comprehension strategies produces improvements in reading comprehension in both younger and older students

# What Good Readers Do When They Read:

“What they found was that good readers achieve comprehension because they are able to use certain procedures — labeled comprehension strategies by the researchers—to relate ideas in a text to what they already know; to keep track of how well they are understanding what they read; and, when understanding breaks down, to identify what is causing the problem and how to overcome it.” (Lehr & Osborne, 2006)

# From the Report of the National Reading Panel:

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“The idea behind explicit instruction of text comprehension is that comprehension can be improved by teaching students to use specific cognitive strategies or to reason strategically when they encounter barriers to comprehension when reading.” (NRP, 2000, p. 4-39).

“Reading instruction is effective in stimulating student comprehension abilities to the extent that it stimulates students to process texts as good readers do.” (Pressley, 2000, p. 545)



# What are reading comprehension strategies?

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Comprehension strategies are specific procedures children can use to help them:

- 1) become aware of how well they are comprehending text as they read
- 2) improve their understanding and learning from text

- Generating questions
- Using background knowledge to make predictions
- Constructing visual representations
- Summarizing

# What do we know from research about the impact of directly teaching reading comprehension strategies?

## The review of the National Reading Panel (2000)

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1. Identified 16 categories of strategy instruction, with 7 having “firm scientific basis” for concluding they improve comprehension in normal readers

Comprehension monitoring  
Cooperative learning\*  
Graphic organizers  
Question answering  
Question generation  
Story structure  
Summarization

Generally much stronger evidence for specific learning on experimenter tests and from text read in the experiment – less evidence for generalization to standardized measures of reading comprehension

## An important cautionary note from a leading comprehension researcher

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The most powerful demonstrations of the impact of comprehension strategies instruction have come from studies that have deeply taught a small repertoire of comprehension strategies over time

We should not assume that effective comprehension strategy instruction involves teaching all the strategies on some list (The NRP's or other)

Pressley, M. (2006). What the future of reading research could be. Presented at meetings of the International Reading Association. April, 2006.

What do we know from research about the impact of directly teaching reading comprehension strategies?  
The review of the National Reading Panel (2000)

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““The major problem facing the teaching of reading comprehension strategies is that of implementation in the classroom by teachers in a natural reading context with readers of various levels”...NRP, 2000, 4-47

Other comments on the challenge of providing effective professional development for teachers in this area. (Pressley, 2006)

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“It is time to do some serious research on how to develop teachers who can provide comprehension strategies instruction that does produce students who learn to use and do use the strategies in a self-regulated fashion”

“I suspect that successful professional development is going to require at least a school year. Such professional development will require developing modeling, explanation, and scaffolding skills in teachers, as well as a commitment to teach and encourage comprehension strategies use every day.

# How can we curricularize high quality instruction in the self-regulated use of comprehension strategies?

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The concept of “balanced” comprehension instruction. Both explicit instruction and modeling, and lots of time for actual reading, writing, and discussion of text. (Duke & Pearson, 2002)

## Critical Elements

1. An explicit description of the strategy and when and how it should be used.
2. Teacher and/or student modeling of the strategy in action
3. Collaborative use of the strategy in action to construct meaning of text.
4. Guided practice using the strategy with gradual release of responsibility – scaffolding by the teacher
5. Independent use of the strategy

How can we curricularize high quality instruction in the self-regulated use of comprehension strategies?

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The larger classroom context (desirable elements)

1. Lots of time spent actually reading
2. Experience reading real text for real reasons – have a purpose for the reading
3. Experience reading the range of genres that we wish students to comprehend
4. An environment rich in vocabulary and concept development through reading, experience, and, above all, discussion of words and their meanings
5. Lots of time spent writing texts for others to comprehend
6. An environment rich in high-quality talk about text

(From Duke & Pearson, 2002)

# How can we curricularize high quality instruction in the self-regulated use of comprehension strategies?

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## Other teaching considerations

1. Using well-suited texts
2. Concern with student motivation
3. Ongoing assessment

Can the child ask a meaningful question about a passage just read?

Does the child's story recall include information organized by story grammar?

Can the child summarize a paragraph briefly?



## A second extended research example: *Concept Oriented Reading Instruction* with 3<sup>rd</sup> grade students

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The Goal: Create a method of improving literacy skills that is highly engaging and effective in establishing use of comprehension strategies to increase reading comprehension

Premise: “motivated students usually want to understand text content fully and therefore, process information deeply. As they read frequently with these cognitive purposes, motivated students gain in reading comprehension proficiency” (Guthrie et al., 2004, p. 403)

# Four principles for creating engaged readers

- When content goals are prominent in reading, students focus on gaining meaning, building knowledge, and understanding deeply, rather than on skills and rewards...meaningful conceptual content in reading instruction increases motivation for reading and text comprehension
- Affording students choices of texts, responses, or partners during instruction. Choice leads to ownership and higher motivation

## Four principles for creating engaged readers (cont.)

- Have an abundance of interesting texts available at the right reading level for every student. Students more readily read text they can read fluently.
- Allow students the opportunity to work collaboratively with ample opportunities for discussion, questioning, and sharing

# “The usefulness of brief instruction in comprehension strategies” Willingham, 2006

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Teaching reading comprehension strategies to students is one way that we teach them that the main purpose of reading is to understand the author's message.

In order to generate useful questions, make summaries, check the accuracy of predictions, create story maps, students must actively think about the meaning of text

Students can learn comprehension strategies relatively quickly, but it is extended practice over time in reading for meaning that actually improves general comprehension. Comprehension strategies help to remind students that the goal of reading is making sense of text

## Other promising strategies and practices

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1. Increasing the amount of time spent in discussion focused on constructing the meaning of text

# The role of discussion in promoting comprehension

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During discussions, students can be directly led to engage in thoughtful analysis of text in ways that support their comprehension when they are reading on their own (Beck & McKeown, 2006).

Increasing the amount of high quality discussion of reading content is also frequently cited as a way of increasing engagement in reading and reading based assignments (Guthrie & Humenick, 2004).

# Characteristics of effective discussions

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approaches that emphasized critical analysis of text or that involved discussion (either teacher led or student led) of specific questions about text meaning had the most consistently positive effect on reading comprehension outcomes (Murphy & Edwards, 2005)

Leading students in discussion while they are reading text may be more effective than discussing text after students have read it on their own (Sandora, Beck, & McKeown, 1999)

## Other promising strategies and practices

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1. Increasing the amount of time spent in discussion focused on constructing the meaning of text
2. Increasing the use of expository text in reading assignments for students in grades 1-3.

Based on hypothesis that, “experience with one type of text will help children become good readers or writer of that type of text but not of some other type of text.”

(Palincsar & Duke, 2004)

Children currently receive very little exposure to informational text in early primary grades—particularly in low SES schools

There is some beginning evidence that inclusion of more informational text does not hurt early reading acquisition, and can promote growth of content knowledge and teacher attention to vocabulary and comprehension



# The Big Ideas: Fluency

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Fluency (reading rate) is causally related to reading comprehension

Reading rate is also correlated with comprehension because of its correlation with other things (vocabulary, SES, ELL status) that influence performance on comprehension tests

Students successful on reading comprehension tests actually can have widely varying reading rates

Helping students become more fluent readers will definitely improve their comprehension—but to get maximum effects, we need to do other things that have an impact on variables like vocabulary, use of active comprehension strategies, etc.

# The Big Ideas: Vocabulary

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Individual differences in vocabulary are definitely related to differences in performance on tests of reading comprehension

The most effective methods of teaching vocabulary so that it influences reading comprehension involve a balance of definitional information and repeated exposure to words in multiple contexts.

Vocabulary instruction, by itself can be expected to have a modest impact on comprehension

To address the large differences in vocabulary size associated with differences in SES, we also have to employ methods that provide at least brief instruction in the meaning of many words

We must find ways to devote more time to vocabulary instruction if we are to “close the SES related achievement gap”

# The Big Ideas: Reading Comprehension Strategies

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1. Teaching comprehension strategies to students is a way of helping them learn to think more deeply about the meaning of text.
2. We should focus on teaching a small repertoire of strategies, and then provide many opportunities for students to use the strategies while reading interesting text that they want to understand.
3. Providing opportunities for students to have high quality discussions about the meaning of text is an important part of instruction in reading comprehension
4. Increasing opportunities for students to read interesting expository text may be very helpful in preparing them for the demands of understanding more complex text in third grade and after.

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