

Bringing it all together: from Phonemic Awareness to Fluency

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An intriguing question...

How are skilled readers able to extract the meaning from text at a rate that suggests they are reading about 4-5 individual words per second?

The Broad Context.....

“One of the great mysteries to challenge researchers is how people learn to read and comprehend text rapidly and with ease. A large part of the explanation lies in how they learn to read individual words. Skilled readers are able to look at thousands of words and immediately recognize their meanings without any effort.”

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An Alternate View.....

Skill in reading involves not greater precision, but more accurate first guesses based on better sampling techniques, greater control over language structure, broadened experiences and increased conceptual development (Goodman, 1976, p. 504)

The more difficulty a reader has with reading, the more he relies on the visual information; this statement applies to both the fluent reader and the beginner. In each case, the cause of the difficulty is inability to make full use of syntactic and semantic redundancy, of nonvisual sources of information (Smith, 1971, p. 221)

Guessing in the way I have described it is not just a preferred strategy for beginners and fluent readers alike; it is the most efficient manner in which to read and learn to read. (Smith, 1979)

Research findings that have falsified the view of fluent reading that depends on heavy use of context to identify words during text reading

- 1. The effects of context on word reading fluency and accuracy are generally larger in poor readers than in good readers**
- 2. Context is not a reliable guide to the identity of individual words in text.**

How Accurately can words be identified from context alone?

Average predictability of words in 4th through 8th grade text is 29.5%. Low frequency words are the least guessable.

Another study found higher predictability for function words (40%) than content words (10%). Unfortunately, content words are the words most likely to be unfamiliar.

Contextual guessing is *least* helpful where it is needed most.

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- 3. Eye movement studies of skilled readers indicate that they directly fixate almost all the words in text.**

Marcel Adam Just and Patricia A. Carpenter

Eye fixations of a college student reading a scientific passage. Gazes within each sentence are sequentially numbered above the fixated words with the durations (in msec.) indicated below the sequence number.

1	2	3	4	5	6	7	8	9	1		
1566	267	400	83	267	617	767	450	450	400		
Flywheels	are	one	of	the	oldest	mechanical	devices	known	to	man.	Every

2	3	5	4	6	7	8	9	10	
616	517	684	250	317	617	1116	367	467	
internal-combustion	engine	contains	a	small	flywheel	that	converts	the	jerky

11	12	13	14	15	16	17	18	19	20	21				
483	450	383	284	383	317	283	533	50	366	566				
motion	of	the	pistons	into	the	smooth	flow	of	energy	that	powers	the	drive	shaft.

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- 4. Skilled readers use information about all the letters in words when they identify them in text**

Which is the real word?

smoak smoke

circus cercus

wagon wagun

first ferst

traid trade

Marilyn Adams on the nature of skilled reading:

...it has been proven beyond any shade of doubt that skillful readers process virtually each and every word and letter of text as they read. This is extremely counter-intuitive. For sure, skillful readers neither look nor feel as if that's what they do. But that's because they do it so quickly and effortlessly. Almost automatically; with almost no conscious attention whatsoever, skillful readers recognize words by drawing on deep and ready knowledge of spellings and their connections to speech and meaning.

In fact, the automaticity with which skillful readers recognize words is the key to the whole system...The reader's attention can be focused on the meaning and message of a text only to the extent that it's free from fussing with the words and letters.

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- 5. Our poorest readers, or children with specific reading disabilities, are particularly different from normal readers in their ability to accurately identify words out of context.**

Children must learn to identify words accurately on the basis of the visual information in print. Children who do not acquire these skills early in elementary school are at high risk for continued reading failure

How does phonemic awareness contribute to the acquisition of reading fluency?

Phonemic awareness has its initial impact on the growth of reading skill by helping children improve the accuracy of their “first guesses” at the identity of unknown words in text.

It makes it possible to generate possibilities for words in context that are only partially “sounded out.”

In order to begin to use the alphabetic principle in reading, children must have knowledge and skill in three areas:

1. Letter-sound knowledge
2. Basic phonological awareness
3. ability to use context to help identify words once they are partially decoded phonetically.

The boy _____ the dog in the woods.

The boy ch ____ the dog in the woods

The first two ways phonemic awareness contributes to the development of reading fluency

In combination with phonics skills, and the use of context, it helps children make accurate guesses about the identify of words the first time they encounter them in print.

It allows children to become independent readers early on because they have a strong strategy for identifying words they haven't seen before in text.

A common definition of reading fluency:

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

National Reading Panel

The most common method of measuring reading fluency in the early elementary grades

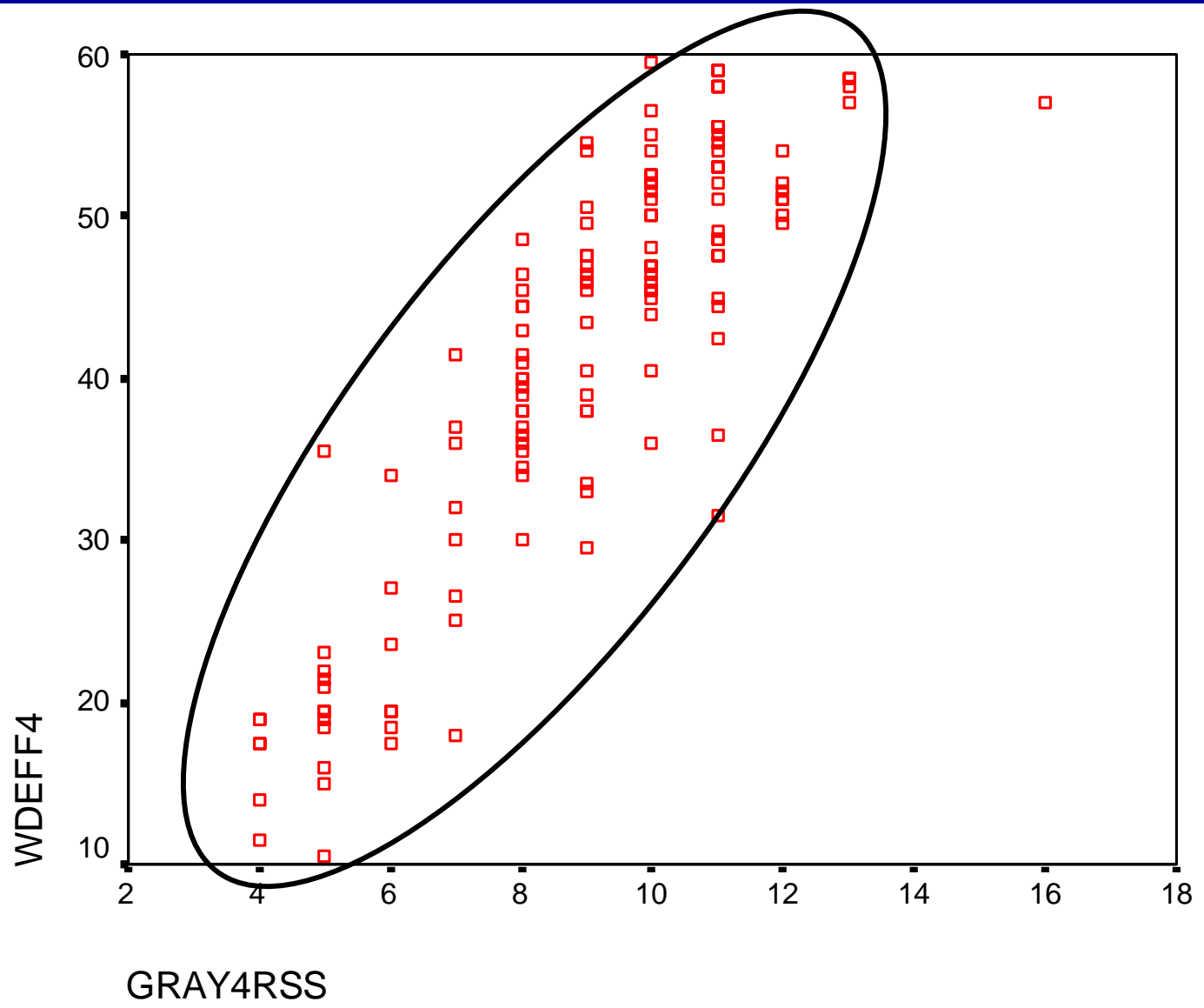
Measuring the number of accurate words per minute a child can read orally

Factors that might potentially influence oral reading rate

1. Proportion of words in text that are recognized as “sight words.”
2. Speed with which sight words are processed - affected by practice or individual differences in basic processing speed.
3. Speed of processes used to identify novel or unknown words -- phonetic decoding, analogy, context.
4. Speed with which word meanings are identified.
5. Speed at which overall meaning is constructed
6. Individual choices about the trade-off between speed and accuracy

A Model of Oral Reading Fluency: Factors that may limit oral reading rate:

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TOWRE

Sight Word

Efficiency

go	shop	chance	mountain
dog	meat	instead	project
in	best	farmer	factories
at	then	spring	straighten
am	spell	present	clarify
it	come	strong	frequent
so	start	huge	mediate
big	green	believe	threshold
be	want	office	modulate
do	better	question	prudent
box	learn	contact	exercise
one	black	history	protect
look	train	invent	desperate
if	even	invoice	quantity
not	went	complete	wonderful
car	thing	custom	initiate
hot	other	inquire	spurious
this	fruit	natural	particular
have	wrong	purchase	emergency
some	watch	vacant	selection
now	truck	everyone	verbatim
need	stars	swollen	awkward
give	winter	fireplace	wilderness
sat	begin	together	grandiose
good	forest	horizon	ornament
here	street	embassy	penitent

These are iNTirEStinG and cHallinGinG times for anyone whose pRoFEshuNle responsibilities are rEelaTed in any way to liTiRucY outcomes among school children. For, in spite of all our new NaWLEGe about reading and reading iNstRukshun, there is a wide-spread concern that public EdgUkAshuN is not as eFfEktlve as it shood be in tEechiNg all children to read.

The report of the National Research Council pointed out that these concerns about literacy derive not from declining levels of literacy in our schools but rather from recognition that the demands for high levels of literacy are rapidly accelerating in our society.

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Why is early development of accurate phonemic decoding skills linked to later fluency in reading?

To be a fluent reader, a child must be able to recognize most of the words in a passage “by sight”

Children must correctly pronounce words 5-10 times before they become “sight words”

Children must make accurate first guesses when they encounter new words, or the growth of their “sight word vocabulary” will be delayed—they will not become fluent readers

Facts about reading from scientific research:

The most efficient way to make an “accurate first guess” of the identity of a new word is:

First, do phonemic analysis and try an approximate pronunciation

Then, close in on the exact right word by selecting a word with the right sounds in it, that also makes sense in the passage

Words likely
to be
encountered
for the first
time in first
grade

animal

faster

happy

never

time

sleep

rabbit

Words likely
to be
encountered
for the first
time in
second grade

amaze

beach

comfortable

example

interesting

grease

stiff

sweep

3rd Grade FCAT passage

_____ the middle _____, it was the
_____ for a _____ to wear his full
set of _____ whenever he
_____ in _____ - even in times
of _____! When a _____ believed
he was _____ friends, he would
_____ his _____. This _____
of _____ showed that the
_____ felt _____ and safe.

3rd Grade FCAT passage

During the middle ages, it was the custom for a knight to wear his full set of armor whenever he appeared in public - even in times of peace!

When a knight believed he was among friends, he would remove his helmet.

This symbol of friendship showed that the knight felt welcome and safe.

According to the model of fluent reading we are considering, a significant part of understanding how children become fluent readers by 3rd or 4th grade involves understanding how they learn to recognize many thousands of words at a single glance.

something decide money then said

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))

“Sight words include any word that readers have practised reading sufficiently often to be read from memory” (Ehri, 2002))

What factors might influence how easily and rapidly children enlarge their “sight word vocabularies?”

1. The number and breadth of the words they have multiple opportunities to read—reading practice
2. The accuracy of the child’s “first guesses” at the identity and pronunciation of unknown words
3. The size of their oral language vocabulary-its easier to accurately guess a “known” word than an unknown word
4. Perhaps a biologically based ability to process symbolic information fluently (RAN tasks)
5. The level and fluency of phonemic awareness
6. Motivation and interest in adding new words to sight vocabulary

The most complete current theory of how children form sight word representations has been developed by Linnea Ehri (Ehri, 1998, 2002)

The theory begins with the statement that “the process at the heart of sight word learning is a connection-forming process. Connections are formed that link individual written words to their pronunciations and meanings in memory

The distinctive contribution of the theory is that it describes what kinds of connections are most likely used to remember sight words.

What are some potential connections that might serve?

Associations between the visual features of words and their meanings.

Shape -- on ate tent

But what about -- stick, sting, sling, string, sink, stink, stick

Sight word reading must involve remembering the letters in the words; these are the distinctive features that make one word different from another.

What are some potential connections that might serve?

However, if these letter sequences were linked arbitrarily to meaning, it would be a very difficult memorization task.

recognize something excitement

“A mnemonically powerful system is needed to explain learning as rapid as occurs for sight words.”

Further, if letters were connected arbitrarily to meaning, we would expect many more synonymous substitutions in reading.

Reading student for pupil

mad for angry

recover for found

Instead--puppet for pupil

angel for angry

fund for found

Instead of arbitrary connections between visual features and meaning, Ehri's theory proposes:

“..that pronunciations of words are the anchors for written words in memory. Readers learn sight words by forming connections between letters seen in spellings of words and sounds detected in their pronunciations already present in memory.”

“When readers learn sight words, they look at the spelling, pronounce the word, and analyse how the graphemes match up to phonemes in that word. Reading the word a few times secures its connections in memory.”

For a reader with well developed phonemic awareness, the phonological structure of a word, which is already known, serves as a mnemonic for remembering the letters in its spelling.

S T O P

/s/ /t/ /o/ /p/

B I R D

/b/ /ɪr/ /d/

G I G G L E

/g/ /ɪ/ /g/ /l/

B R I G H T

/b/ /r/ /aɪ/ /t/

S W* O R D

/s/ /o/ /r/ /d/

I S* L A N D

/aɪ/ /l/ /æ/ /n/ /d/

“...readers learn to process written words as phonemic maps that lay out elements of the pronunciation visually. Beginners become skilled at computing these mapping relations spontaneously when they read new words. This is the critical event for sight word learning. Grapho-phonemic connections provide a powerful mnemonic system that bonds written words to their pronunciations in memory along with meanings. Once the alphabetic mapping system is known, readers can build a vocabulary of sight words easily. “

Relating the growth of phonemic decoding skills to the quality of orthographic representations required for recognizing words at a single glance

Phases in development of word reading influence the quality of sight word representations

Pre-alphabetic phase -- children do not use letter-sound connections to read words. They remember selected visual features.

Look dog spiderman

Partial alphabetic phase -- children form connections between some of the letters and sounds in words

Jail -- JL

house -- HS

clap CP

Two kinds of weaknesses in word reading

1. Inability to completely segment sounds in words
2. Incomplete knowledge of sound-letter relations-- particularly vowels

Alphabetic phase -- children form connections between all of the letters and sounds in words. Representations are more complete, and reading is more accurate

As children's increasingly developed phonemic skills lead to more detailed analysis of the internal structure of words in print, they begin to acquire increasingly explicit and more fully specified orthographic representations. *However, if their phonetic skills do not develop, their orthographic representations are likely to remain incompletely specified, and they will be inaccurate readers and poor spellers.*

Summary of the connection between reading fluency and phonemic awareness

1. Phonemic awareness contributes to the development of sight words in three ways:
 - A. It helps children to make more accurate “first guesses” when they encounter a word for the first time.
 - B. It allows children to become independent readers early in development.
 - C. It helps them use the phonemic structure of words as a mnemonic for remembering the letters in a word’s spelling. Thus, it is directly helpful in forming fully developed sight word representations in memory.
2. A major factor that determines reading fluency is the proportion of words in a passage that can be recognized as sight words.

Important impediments to the development of reading fluency for at-risk children

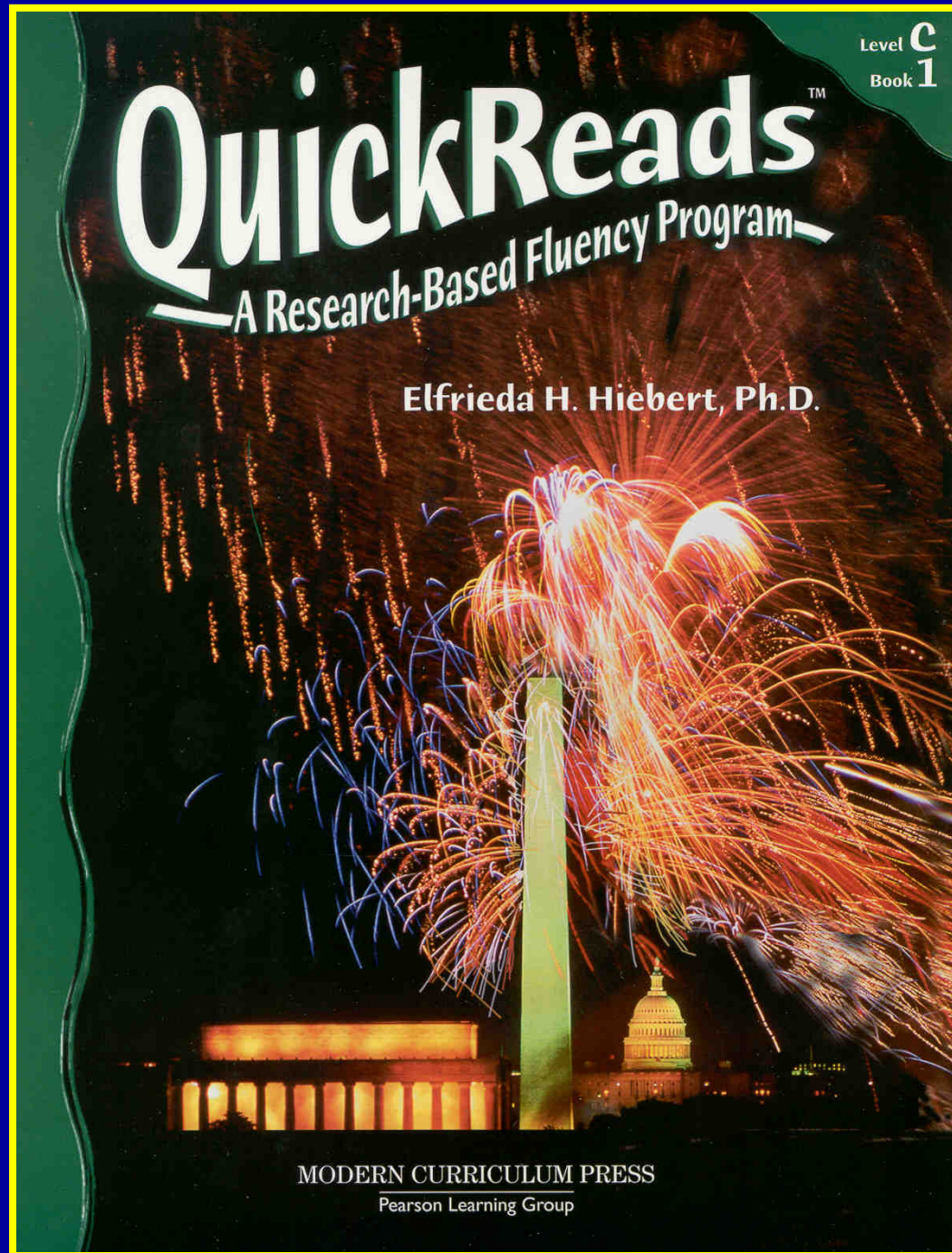
1. Delays in the development of accurate phonemic decoding skills and possibly incomplete development of phonemic awareness
2. Lack of reading practice
3. Problems with the texts children are asked to read-too many singletons and difficult words
4. Perhaps a biologically based weaknesses in ability to process symbolic information fluently (RAN tasks)

Implications for instruction

1. Phonemic awareness and phonemic decoding skills should be stimulated early in development as one key to accurate reading of words when they are first encountered in print
2. Young children should be encouraged and supported to do lots of reading at the right level-- there should be lots of opportunities for guided oral reading (reading with feedback).
3. Classrooms and assignments should be structured so that students have opportunities and motivation to repeatedly read the same material with an emphasis on fluency

Implications for instruction (cont.)

4. Text that is specifically written to provide extra practice opportunities for high-utility “core vocabulary” words may be particularly efficient for building fluency through early acquisition of high frequency words in sight vocabularies



Short texts to be read quickly with meaning.

60 texts each at grades 2,3,4.

Carefully structured to focus on 1000 most frequent words and important phonemic patterns

www.quickreads.org

“It is important to distinguish between reading processes that develop in learners and instructional methods that teachers use to teach these processes...my view is that by focusing on learners and the processes they acquire, we will be in a better position to decide how to teach these processes effectively and to discern whether our students are making the progress we expect.”

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Thank
You