

# Science of Reading Levels

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# Book Leveling History

- The idea that texts vary in difficulty along a continuum can be traced back to Aristotle
- The role of such a continuum in teaching came to America on the Mayflower (Protestant Tutor)
- The idea that students should be taught with texts that start simple and grow more challenging over time has consistently been a part of American education
- New England Primer
- Webster's Blue Back Speller
- McGuffey's Eclectic Readers

# Book Leveling History (cont.)

- Leveling was an idea widely shared among printers, publishers, and educators evidently based on the premise that learning proceeded from simple to complex
- Their control of this complexity continuum was either subjective or they had methods for this that were unstated
- These efforts increased with the introduction of age graded schools in 1837

# Book Leveling History (cont.)

- This kind of informal leveling continued into the 20<sup>th</sup> century
- An early survey (1918) indicated that 6% of primary teachers tested their students' reading rate and comprehension, 58% taught reading in small ability groups, and 42% used graded reading materials to differentiate instruction
- Student placement was based on subjective and unstated methods decisions
- This shows early recognition of the idea that text difficulty represented a continuum, student reading ability represented a continuum, and that the coordination of these continua would facilitate teaching and learning

# Book Leveling History (cont.)

- Psychologists began the scientific study of text readability (Lively & Pressley, 1923)
- This was an attempt to identify text features that could be measured for the purpose of predicting reading comprehension – or to place books on a known continuum of difficulty
- Despite the increasing availability of these readability schemes, the control of reading challenge in basal readers was determined almost entirely on rigorous vocabulary controls (with stories written for the purpose fo teaching)
- These controls led to inauthenticity of language and negative reactions

# Book Leveling History (cont.)

- From 1910-1940, there are occasional mentions of the idea that students should be taught at “their levels” in the professional literature (e.g., Gray, Thorndike, Durrell), but with no specification of how that should be done
- In 1946, Emmett Betts publishes the *Foundations of Reading*, the *ur* textbook of that era – it provides a specific definition of the “instructional level” and provides a methodology that teachers can use to place their students in the level of texts that the science indicated to be most appropriate to support learning
- Not clear how widely used this scheme but it is a popular approach both in general and special education by the 1970s

# Book Leveling History (cont.)

- In the 1970s, the use of rigid formulaic basal reader text began to give way to the anthologizing of existing texts based on readability -- usually with some revision to ensure adequate simplicity of the texts
- This resulted in somewhat more difficult text – in terms of word reading demands in the primary grades – but not to a remarkable extent
- However, in 1986 California’s Whole Language framework banned the use of texts written for the purpose of teaching – and disallowed revisions of texts to make them more accessible to students
- This dramatically elevated the difficulty of beginning reading texts (e.g., singletons), and provided no instructional support

# Book Leveling History (cont.)

- In the 1990s, in response to the inaccessibility of the basals of the time (particularly in the primary grades), Fountas and Pinnell published their landmark textbook, *Guided Reading*, which called for teaching students from books leveled based on a scheme they had developed
- Teachers were greatly relieved and flocked to this because it meant that students did not have to be placed in books they could not read
- Also, U.S. Department of Education grants lead to the development of Lexiles – a practical readability scheme that took advantage of the technical developments of the time

# Book Leveling History (cont.)

- In 2010-2011, the Common Core State Standards were adopted by more than 40 states
- These standards required that students learn to read texts at their grade levels (and used Lexiles, etc. to operationalize what grade-level reading meant)
- Textbook companies raised the reading levels of their books

# Book Leveling History (cont.)

- National surveys reveal that since standards began requiring that students be able to read grade level text, teachers have increased the likelihood that they teach with easier books (Fordham, 2010, 2018)
- 77% of teachers claim that teaching students with texts at their “reading levels” was aligned with their state standards (Rand, 2016)
- Reading programs that emphasize teaching students at their levels predominate (Education Week, 2019)

# The problem

That texts are on a difficulty continuum and that children's reading levels are also on such a continuum is without question (scientifically sound and obvious)



How these two continua have been connected to facilitate learning has worked to some extent – readers usually make progress when placed in leveled readers



**However, research has also found this approach not to be optimum – students make lower gains than they would with more challenging text**

The problem  
(cont.)

My contention is that there is not

Instructional levels are too low –  
students should be trying to read more  
difficult books

Teaching should support, guide, and  
scaffold students' attempts to read  
these more challenging texts

# A caution

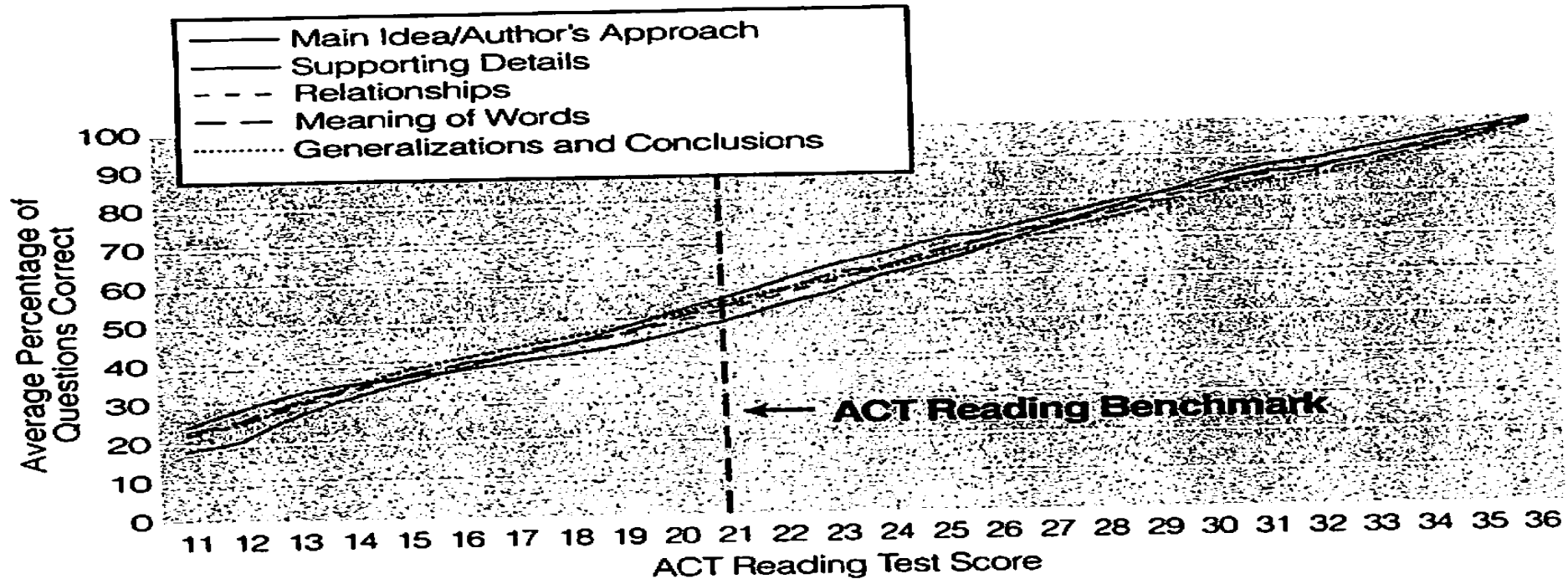
- The focus here is not on beginning reading
- It does not include preschool, kindergarten, or first grade
- Or the teaching of any student who has not mastered the foundational levels of decoding
- If students cannot yet read at a high first grade level or a low second grade level, then he/she should be working in texts that have high decodability and a great deal of word repetition
- Making beginning reading texts more difficult usually means making it difficult for students to recognize spelling patterns – which will slow student progress

## Why teach with challenging text?

Why did the states adopt standards that require attention to text levels?

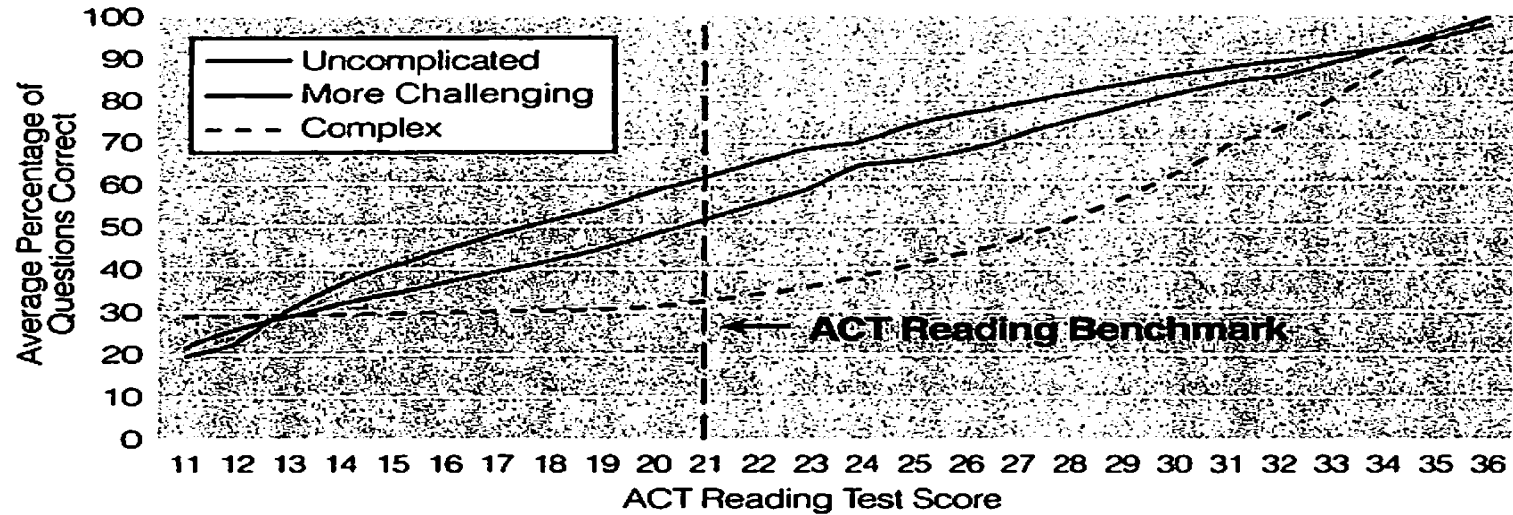
- Historically, state educational standards emphasized the teaching of comprehension skills and strategies with the idea that whatever levels students were reading at they could learn to identify certain types of information, infer, compare, draw conclusion, identify main ideas, etc.
- They found out that such comprehension skills do not reveal how well students can read, but text levels do
- Reading tests measure how well students can comprehend text passages— not how well they can answer types of questions (ACT, 2006; Davis, 1944; Muijselaar, et al., 2017; Spearritt, 1972; Thorndike, 1972)

# No performance differences due to question types (cont.)



*Figure 11: Performance on the ACT Reading Test by Textual Element (Averaged across Seven Forms)*

# Text differences affect reading performance



*Figure 12: Performance on the ACT Reading Test by Degree of Text Complexity (Averaged across Seven Forms)*

## Why teach with challenging texts? (cont.)

- ACT concluded if the text was easy enough, students could answer any kind of question; and if the text was hard enough, students couldn't answer any of kind of question
- Teaching students to answer certain types of questions of texts written at their supposed "instructional levels" does not maximize student learning

# What do teachers do when texts get complex?

What do teachers do when texts get complex?

- Move kids to easier texts
- Read the texts to the students
- Tell students what the texts say
- Ignore the fact that many students can't make sense of the text

In other words, teachers have no methodology for teaching students to read challenging texts – so avoiding challenge is the approach

# Instructional Level Theory

- According to Betts (1946), research shows that all students have three reading levels, and they make optimum gains when taught at the instructional level
- Also, very important to avoid frustration level texts since their use disrupts learning and suppresses motivation
- Independent (fluency 99-100%; comprehension 90-100%)
- Instructional (fluency 95-98%; comprehension 75-89%)
- Frustration (fluency 0-92%; comprehension 0-50%)

# What does science have to say?

- Given the long history of the use of the instructional level, it should be clear that it is possible to teach students to read with such texts
- The issue here isn't "does it work," but "does it work best?"
- The following studies make up the universe of data that we have on this issue

## Killgallon, 1942

- This was the study that Betts referred to in his textbook
- Killgallon was his doctoral student, and this doctoral dissertation was never published (until an excerpt was published in 1983 by me)
- The study was used to set the fluency criteria for informal reading inventories
- It examined a small group of 4<sup>th</sup> graders to find out how many oral reading mistakes they could make and still accomplish 75% reading comprehension
- Problem with the comprehension criteria as well

## Powell, 1968 (etc.)

- Powell agreed with the Killgallon/Betts methodology, but he believed they ended up with the wrong criteria
- Collected multiple sets of data with large numbers of children in grades 1-8
- These analyses found different relationships between fluency and comprehension at different grade levels
- They also reported that students could handle much more disfluency than Betts/Killgallon claimed
- Despite his extensive, contemporary data, Powell was treated as a kook in the field

# Dunkeld, 1981

- Dunkeld was a student of Powell, and this was his doctoral dissertation
- This was not an experiment
- Dunkeld tested a bunch of 2<sup>nd</sup> graders to determine how accurately they could read the words and comprehend the texts used to teach them to read
- At the end of the year, students were retested to see how much growth
- The greatest learning gains were for students with approximately 85% word reading accuracy and below 50% reading comprehension (frustration level– not instructional level)

## Jorgensen, et al., (1977)

- Similar study to Dunkeld's
- This version monitored the reading progress of boys in the 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> grade
- Found no consistent relationship between their instructional text placement and their learning progress (it didn't make any difference whether students were placed at instructional or frustration level)

## Morgan, et al., (2000)

- Morgan conducts the first true experiment evaluating the effectiveness of placing students at their instructional level
- She tests second graders using the DRA and Betts' criteria, then randomly assigns students to one of three treatment groups
- One works at their instructional level, one works with texts two grade levels above their instructional level, and one at four grade levels above instructional level
- The students taught at the instructional level made the lowest gains (those texts reduced opportunity to learn)

## Brown, et al., (2017)

- This study replicates the Brown study
- Same methodology but with third graders
- Same result – frustration level placements allowed for greater learning progress

## O'Connor et al. (2002)

- Conducted an experiment with students who had IEPs (3rd, 4<sup>th</sup>, 5<sup>th</sup> graders)
- The best readers were at the 2<sup>nd</sup> grade level (the rest were below this)
- Students were tutored in PA, phonics, vocabulary, oral reading fluency, and reading comprehension
- Random assignment to 3 groups: control group, and 2 groups tutored either with text at instructional or grade level
- Problems with the study that I will ignore
- She found that instructional level placement led to greater learning

## O'Connor et al. (2010)

- O'Connor reports problem with the first study – different tutor responses to misreadings (confound)
- Decides to redo study – this time, training all tutors to respond to errors in the same way
- Re-did the experiment (without the confound or the implementation problem)
- Instructional level placement provided no benefit for students with learning disabilities – they made no more progress than the grade level placed students
- Response of students with dyslexia?

## Kuhn, et al., 2006 (etc.)

- Quasi-experiment with 2<sup>nd</sup> graders
- Students either taught with FORI using grade level texts or Guided Reading with students taught at reading levels
- FORI kids made greater learning gains than Guided Reading
- Continued study into 3rd grade – increased their advantages

## Homan, et al., (2010)

- They either taught sixth graders with instructional level text or with texts one year above their instructional levels
- No benefit to the instructional level placements

## Lupo, et al., (2019)

- Taught 9<sup>th</sup> graders either at their instructional levels or at their grade level
- Provided instructional guidance and support
- There was no learning benefit to being placed in the easier texts, and the students preferred the grade level placements
- The students who did better with the easier texts were “newcomer” English Learners

Can we just  
throw  
students into  
difficult text?

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The basic idea of the instructional level is that if you match students to text appropriately you can increase learning and minimize the need for teaching

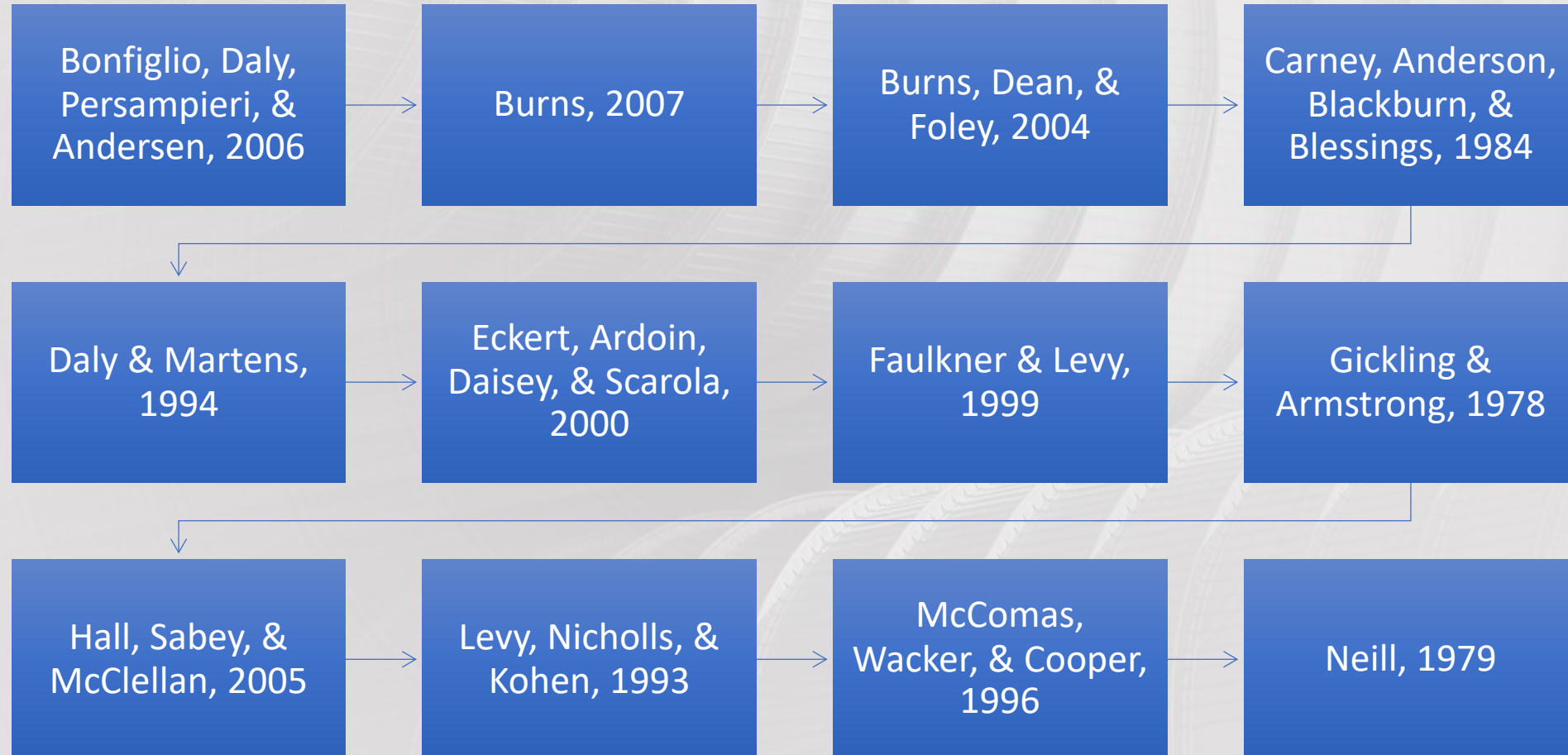
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The basic idea of placing students in grade level text is that you can maximize learning – but there is no evidence that students can accomplish this without greater instructional efforts

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Supplementing the reading of complex text with instructional guidance and scaffolding will allow students to deal with frustration level texts *AS IF* those texts were at their instructional level

# Evidence that Scaffolding Can Do This?



# Evidence that Scaffolding Can Do This? (cont.)

O'Shea, Sindelar, &  
O'Shea, 1985

Pany & McCoy,  
1988

Rasinski, 1990

Reitsma, 1988

Rose & Beattie,  
1986

Sanford & Horner,  
2013

Sindelar, Monda, &  
O'Shea, 1990

Smith, 1979

Stoddard, Valcante,  
Sindelar, O'Shea, et  
al., 1993

Taylor, Wade, &  
Yekovich, 1985

Turpie & Paratore,  
1995

VanWagenen,  
Williams, &  
McLaughlin, 1994

Weinstein &  
Cooke, 1992

Wixson, 1986

# Reconceptualizing Reading

Reading is not the ability to answer certain kinds of questions (skills)

It is the ability to read and understand text – to negotiate the conceptual, linguistic, and textual affordances

# Scaffolding Challenging Text

## **Text Scaffolds**

- Match of text and reader prior knowledge
- Complexity of vocabulary
- Complexity of syntax
- Complexity of coherence
- Familiarity of genre demands
- Complexity of text organization
- Subtlety of author's tone
- Sophistication of literary devices
- Sophistication of data-presentation devices
- Familiarity of print features (e.g., typography, page layouts, etc.)

# Scaffolding Challenging Text

## **Other Instructional Supports**

- Oral reading fluency
- Rereading
- Comprehension strategies
- Motivation

# Build/Access Prior Knowledge

Readers do not just take in information –  
all learning is interpretive

We take in information through the lens of  
what we know (we interpret it, we combine  
it with already known information)

Texts may be challenging if they presuppose  
or require overt use of prior knowledge

Students can be guided to use their related  
experiences in ways that scaffolds the new  
knowledge

Too often we do this poorly in classrooms

# Supporting Knowledge Use

**Knowledge activation :**  
bringing to mind what one  
already knows

**Knowledge building  
(integration/revision) :**  
extending or adjusting what  
they have

# Supporting knowledge use (cont.)

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Previewing

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Writing or discussing relevant knowledge

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Apprentice texts

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Text sets

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Concept maps

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Refutation texts

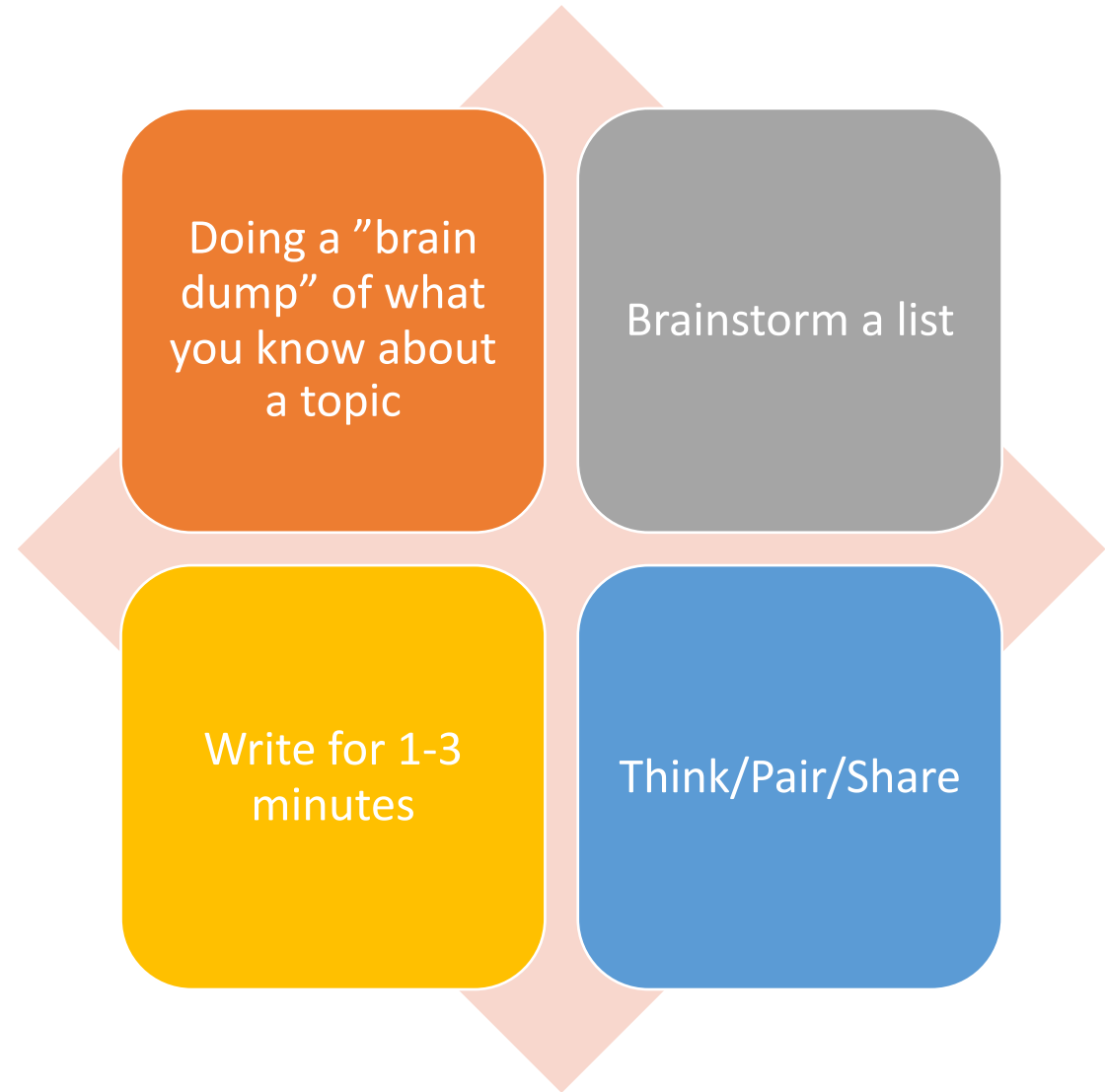
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Connecting text info to knowledge

# Previewing (Activation)

- Quickly examining a text before reading it should provide some direction for prior knowledge considerations
- Teachers (and textbooks) tend to provide a good deal of previewing which should facilitate comprehension
- What is needed, however, is a more efficient and strategic approach to previewing
- Previewing should be purposeful – it should reveal the genre, topic and direction of a text, and the type of information that will be provided
- Different kinds of texts require different kinds of previewing
- Previewing should be efficient – what text features will reveal what I'm looking for?

Writing/Discussing  
Prior Knowledge  
(Activation)



## Apprentice Texts (knowledge building)

If text focuses on content that students are unlikely to know anything about, consider starting with a shorter, easier text on the same content

In other words, use their reading to build relevant prior knowledge – such reading reduces the degree of difficulty of the text to come by familiarizing students with the content that will be explained in a more extended, complete, and/or complex fashion in the later text

## Text sets (building knowledge)

Building relevant knowledge through reading

Text sets provide mutual supports

Visual texts

Accessible texts

Motivational texts

Repeated reading of complex texts (chunks)

## Supporting knowledge use (cont.)

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Don't overdo it – supporting information should not be a repetition of the text (that does not enable more successful reading it replaces it)

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A “prior knowledge” emphasis instead of “knowledge” emphasis has put too much focus on *pre-reading*

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Supporting students use of their knowledge can include pre-reading, reading, and post-reading actions (Lupo, 2019)

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Relational reasoning: looking for similarities and differences with what you know or believe (Hattan & Lupo, 2020)

## Supporting knowledge use (cont.)

Prior knowledge may overwhelm a text (readers tend to stay with their preconceptions, so if text information disagrees with a reader's knowledge, the reader often fails to learn)



Too much prereading emphasis on prior knowledge may encourage this kind of non-learning



Refutation texts and relational reasoning exercises can help with this

# Vocabulary Supports

Texts can be hard because of unfamiliar vocabulary (difference between academic vocabulary and key vocabulary in a text)

For most people, vocabulary challenge is the most obvious difficulty in reading a text

We teach vocabulary, but there are two major goals in vocabulary teaching:

(1) building a lexicon

(2) enabling immediate understanding of text