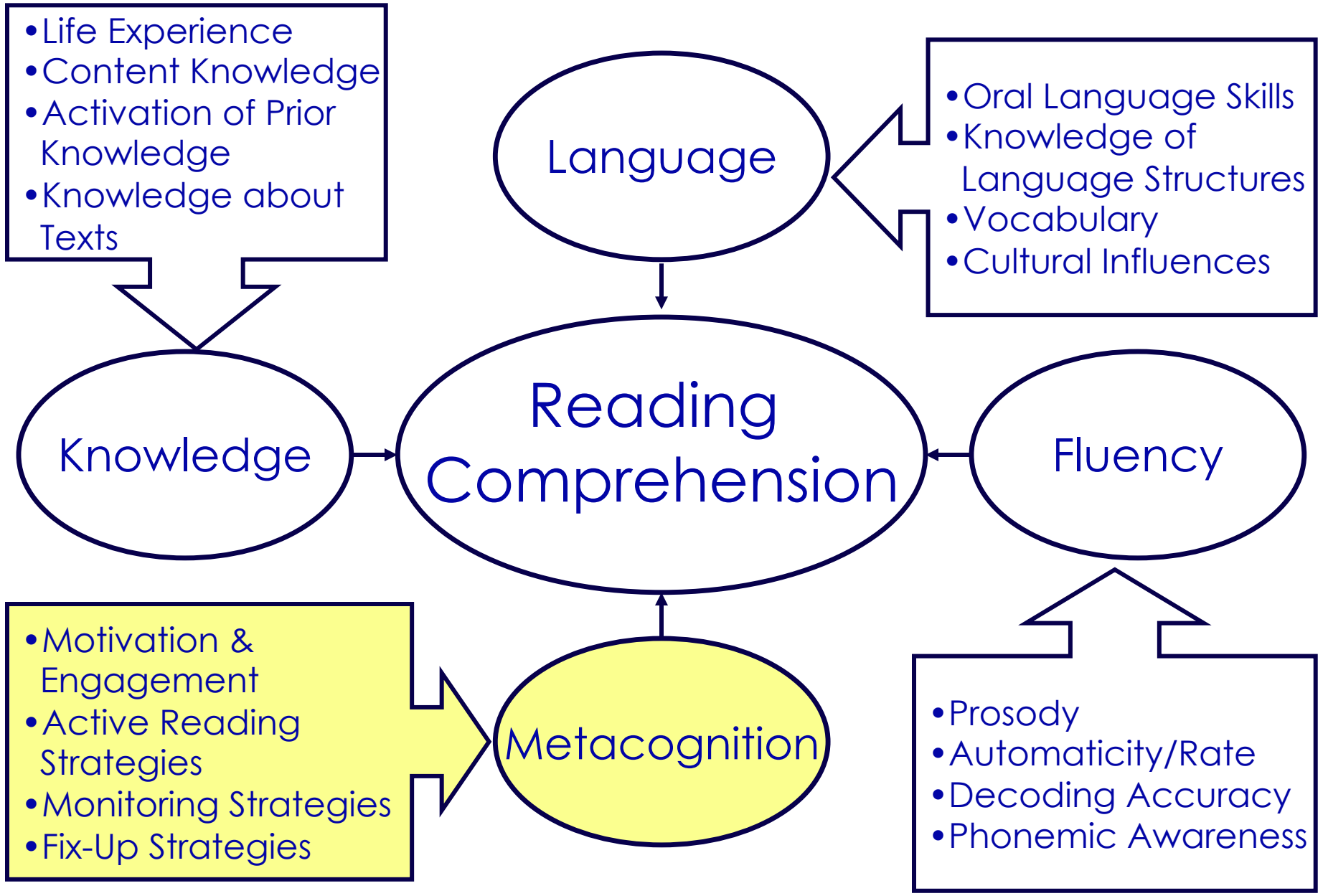
Metacognition



Florida Reading Initiative Conceptual Framework (Lane & Hayes, 2015)

What is Metacognition?

Metacognition is ***thinking*** about ***thinking***.

What is Metacognition?

Metacognition

- in general, refers to one's knowledge concerning one's own **cognitive processes**
- in relation to reading, refers to awareness of one's own **understanding of text**, or lack thereof

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What is Metacognition?

Examples of metacognition:

- I notice that I am having more trouble learning A than B.
- It strikes me that I should double check C before accepting it as fact.
- I notice I must have misunderstood something earlier based on new information in the text.

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Metacognition

Metacognition includes various aspects of thinking, including

- the capacity to notice and evaluate one's own thought processes
- monitoring understanding
- monitoring memory
- self-regulation, and
- developing and maintaining mental purposes for actions.

What are some strategies you use when you read?

List a few…

What are some strategies you use when you read?

How many items on your list are *strategies*, and how many are *skills*?

Comprehension Skills

- Finding the main idea and details
- Identifying the author's purpose
- Drawing conclusions
- Comparing and contrasting
- Evaluating critically
- Sequencing events

Comprehension Strategies

- Monitoring
- Visualizing
- Rereading for clarification
- Making connections
- Determining importance
- Making predictions
- Generating questions
- Summarizing

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Did you know…

The focus of most reading comprehension instruction is teaching strategies, however…

- Effective **use of** strategies can support reading, but **instruction** in strategies has been shown to have only a small impact on reading comprehension.
- Some strategies can actually **impair** comprehension.

Wait. What?

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Did you know…

Yep, during-reading predictions can actually derail a reader's comprehension.

- Readers with low working memory capacity tend to perform ***worse*** on tests of reading comprehension after they've been asked to make predictions while reading.
- More often than not, they remember what they predicted rather than what the text actually said.

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Did you know…

The focus of most reading comprehension instruction is teaching strategies, however…

- Effective use of strategies can support reading, but **instruction** in strategies has been shown to have only a small impact on reading comprehension.
- Some strategies can actually impair comprehension.
- Generally, instruction on a strategy should last no more than **5-10** lessons. After that, it is likely to have no additional benefit.

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Think about it…

We all have ways we approach problems, if the approach you are teaching does not resonate with students after a few sessions, it is unlikely to be effective.

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Did you know…

Most comprehension research is seriously flawed because there are simply too many variables to control. Here are some variables found to affect how readers answer questions:

- poor vs good readers
- low vs high knowledge
- story vs informational text
- verbatim vs paraphrase
- open-ended vs close-ended questions
- reading vs re-reading
- text available vs unavailable
- factual vs. inferential questions
- immediate recall vs. delay
- the centrality of the information queried
- length of text

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A Cautionary Note

"A potential drawback of strategy-based instruction is that the attention of teachers and students may be drawn too easily to the features of the strategies themselves rather than to the meaning of what is being read."

(Beck, McKeown, Hamilton, & Kucan, 1997, p. 16)

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Comprehension Interventions

National Study of the Effectiveness of Reading Comprehension Interventions

- A large-scale, randomized control trial sponsored by the U.S. Department of Education's Institute of Education Sciences, examined the effects of four supplementary comprehension intervention curricula on 5th grade students.
- It involved 268 teachers and 6,350 students in 89 schools in 10 mostly large disadvantaged urban districts in 8 states.

(Mathematica Policy Research, Inc., 2009)

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Comprehension Interventions

National Study of the Effectiveness of Reading Comprehension Interventions

- This comprehensive study addressed three questions:
  1. What is the impact of reading comprehension curricula on reading comprehension, and how do impacts of individual curricula compare to one another?
  2. How are student, teacher, and school characteristics related to effects of the curricula?
  3. Which instructional practices are related to effects of the curricula?

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Comprehension Interventions

National Study of the Effectiveness of Reading Comprehension Interventions

- Project CRISS (Santa et al. 2004) focuses on five keys to learning:
  - background knowledge
  - purpose setting
  - author's craft (which involves using text structure to improve comprehension)
  - active learning, and
  - metacognition.
- The program is designed to be used each day during language arts, science, or social studies periods.

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Comprehension Interventions

National Study of the Effectiveness of Reading Comprehension Interventions

- In ReadAbout (Scholastic, 2005), students are taught primarily through a computer program, reading comprehension skills such as:
  - author's purpose,
  - main idea,
  - cause and effect,
  - compare and contrast,
  - summarizing, and
  - inferences.
- Students apply what they have learned to a selection of science and social studies trade books.

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Comprehension Interventions

National Study of the Effectiveness of Reading Comprehension Interventions

- In Read for Real (Crawford et al. 2005), students learn strategies they can use before, during, and after reading, such as
  - previewing,
  - activating prior knowledge,
  - setting a purpose,
  - main idea,
  - graphic organizers, and
  - text structures.
- Each unit includes vocabulary, fluency, and writing activities.

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Comprehension Interventions

National Study of the Effectiveness of Reading Comprehension Interventions

- Reading for Knowledge (Madden & Crenson, 2006) makes extensive use of cooperative learning strategies and a process called SQRRRL:
  - Survey,
  - Question,
  - Read,
  - Restate,
  - Review,
  - Learn

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Comprehension Interventions

National Study of the Effectiveness of Reading Comprehension Interventions

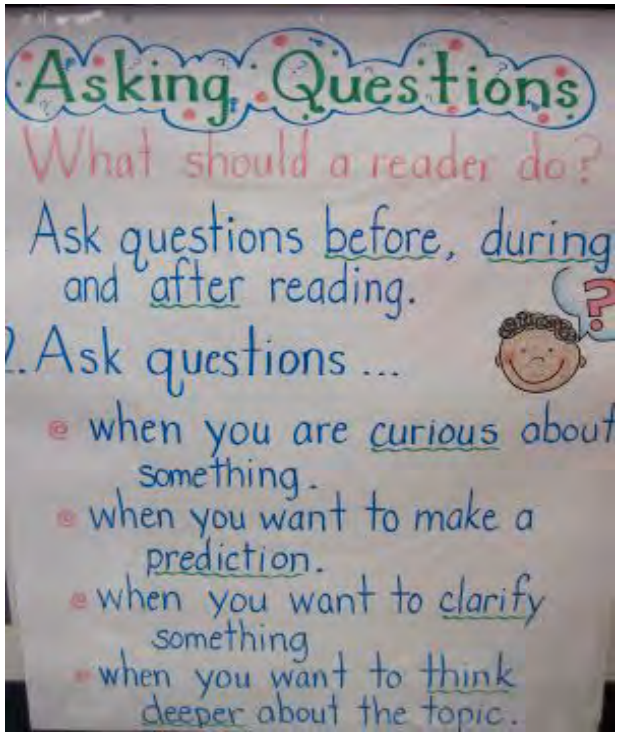
- Overall, these curricula had **no positive impact** on student test scores, and **in some cases, had a negative impact**.

Comprehension Strategies

- So, if none of these popular comprehension intervention programs is effective, where do we go from here?
- Two types of strategies have been highlighted as particularly important:
  - **Questioning**
  - **Summarizing**

Question Generation: Strong Evidence

Question generation, which involves students, not teachers, asking questions as they read. The point of this strategy is for students to actively engage in the text by thinking about questions they want to answer as they read.



(Block & Parris, 2008; Joseph et al., 2016; Martin & Pressley, 1991; Wood et al., 1990; Rosenshine et al. 1996)

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Question Generation: Strong Evidence

Why should we ask questions when we read?

- Questions are the key to understanding.
- Questions clarify confusion.
- Questions stimulate research efforts.
- Questions provide the impetus to read for deeper understanding.

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Question Generation: Strong Evidence

- Teaching students to **ask their own questions** improves their active processing of text.
  - Questioning helps students determine whether or not they understand what they are reading.
  - Students can learn to ask questions that help them integrate information from different segments of text.

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Question Generation: Strong Evidence

Effectiveness of Questioning

- Questioning helps students to
  - find a purpose for reading
  - focus their attention on what they are learning
  - think actively as they read
  - monitor their comprehension
  - review content and relate what they have learned to what they already know.

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Question Generation: Strong Evidence

Informational Text vs. Fiction

The **types** of questions we ask ourselves while reading will differ based on the type of text we are reading.

- When you are reading fiction, you might ask questions about character motivation, the plot, and how the setting might affect the characters.
- When you are reading informational text, you would read the charts and diagrams to help you understand the text better.

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Question Generation: Strong Evidence

Sticky Note Questioning

1. As you're reading, write questions that come to mind on a sticky note.
2. Read on, keeping your questions in mind.
3. When one of your questions is answered, move the sticky note to the part of the text where the answer was found.
4. Write the answer on the sticky note and label it "A" for answered.
5. Write "HUH?" on the notes where you are confused, and reread to answer the question

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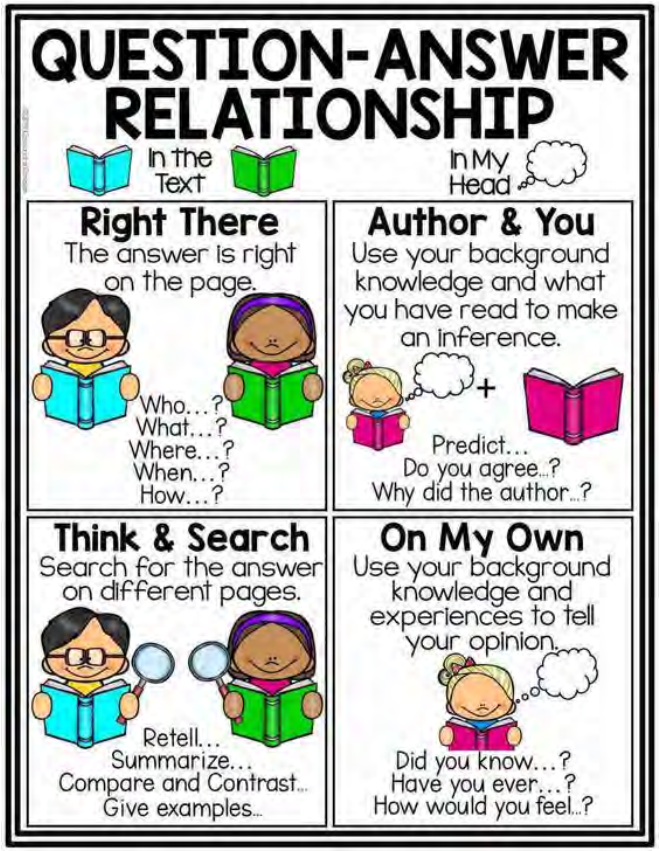
Question Generation: Strong Evidence

Question Answer Relationships (QAR)

- ***Right There*** **-** literal questions that ask about information directly stated in one sentence of the text
- ***Think and Search***-requires the reader to put together information from two or more sentences
- ***Author and Me***-requires the reader to use information presented in the text and from personal experience or prior knowledge
- ***On My Own***-can be answered without using information presented by the author



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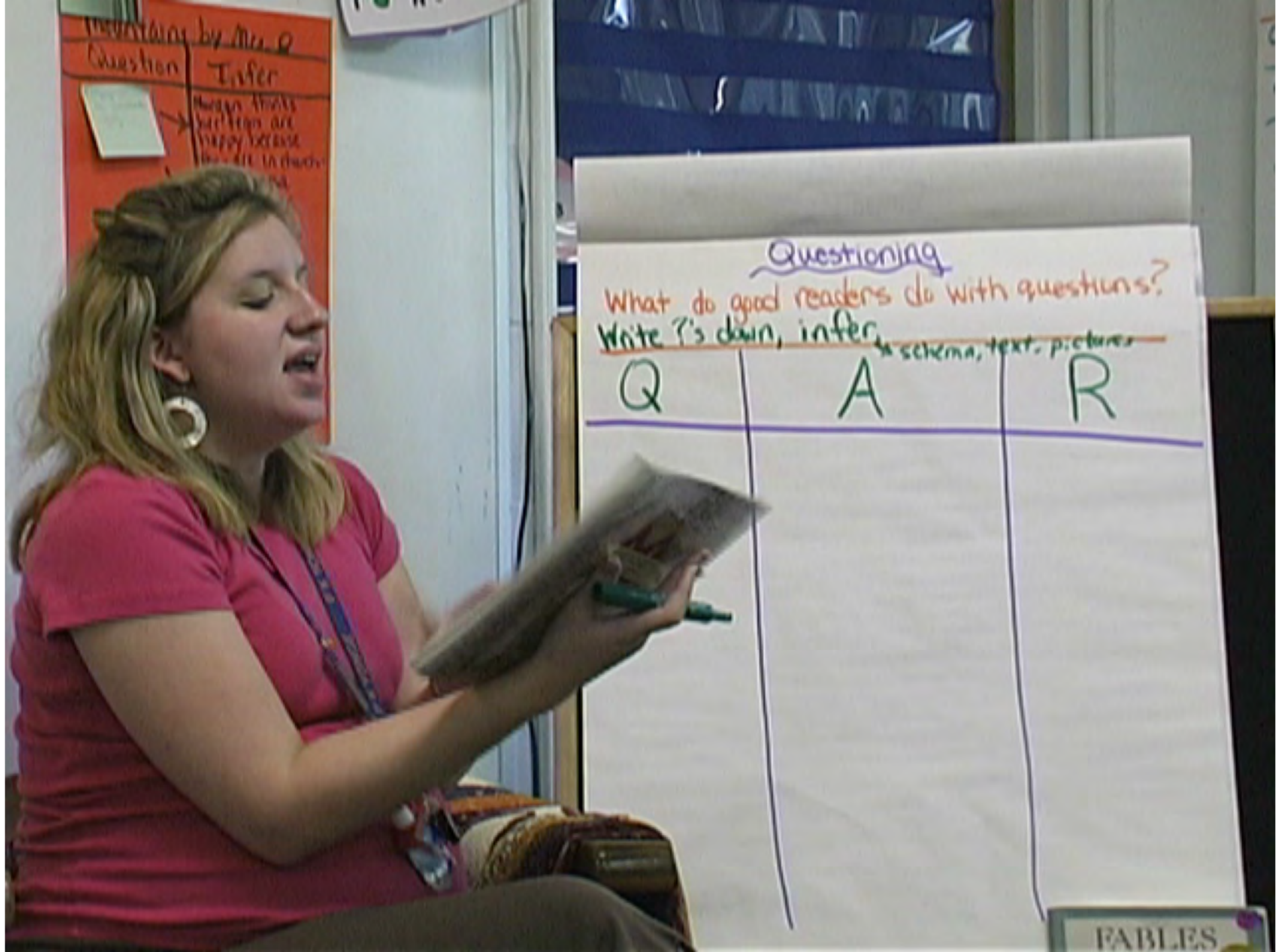
Question
Infer
Questioning
What do good readers do with questions?
Write 7's down, infer
schema, text, pictures
Q
A
R
FABLES

Question Generation: Strong Evidence

A Note About Effective Questions

"Students' understanding and recall can be readily shaped by the types of questions to which they become accustomed…if students receive a steady diet of factual detail questions, they tend, in future encounters with text, to focus their efforts on factual details….If, by contrast, more general or more inferential understanding is desired, teachers should emphasize questions that provide that focus."

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Comprehension Interventions

Summarizing

- Consists of condensing textual information into essential or main points.
- It employs multiple strategies, such as
  - determining what is important
  - categorizing
  - organizing information

(Block & Pressley, 2003; Calfee & Patrick, 1995; NICHD, 2000)

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Summarizing: Strong Evidence

- A summary is a **synthesis** of the important ideas in a text.
- Summarizing helps students learn to determine what is important in the text, to condense information, and to put it in their own words.
- Summarizing helps students
  - ✓ Identify or generate main ideas
  - ✓ Connect the main or central ideas
  - ✓ Eliminate redundant and unnecessary information
  - ✓ Remember what they read

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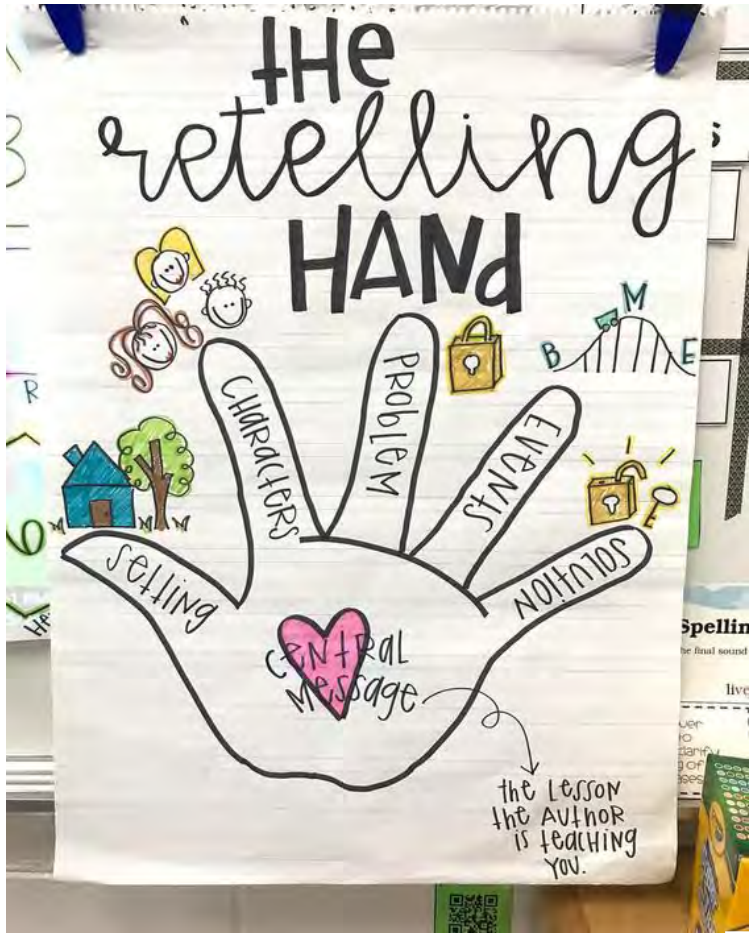
Summarizing: Strong Evidence

Summarizing requires the readers to…

- Sift through large units of text
- Differentiate important from unimportant ideas
- Synthesize those ideas
- Create a new coherent text that can legitimately "stand for" the original

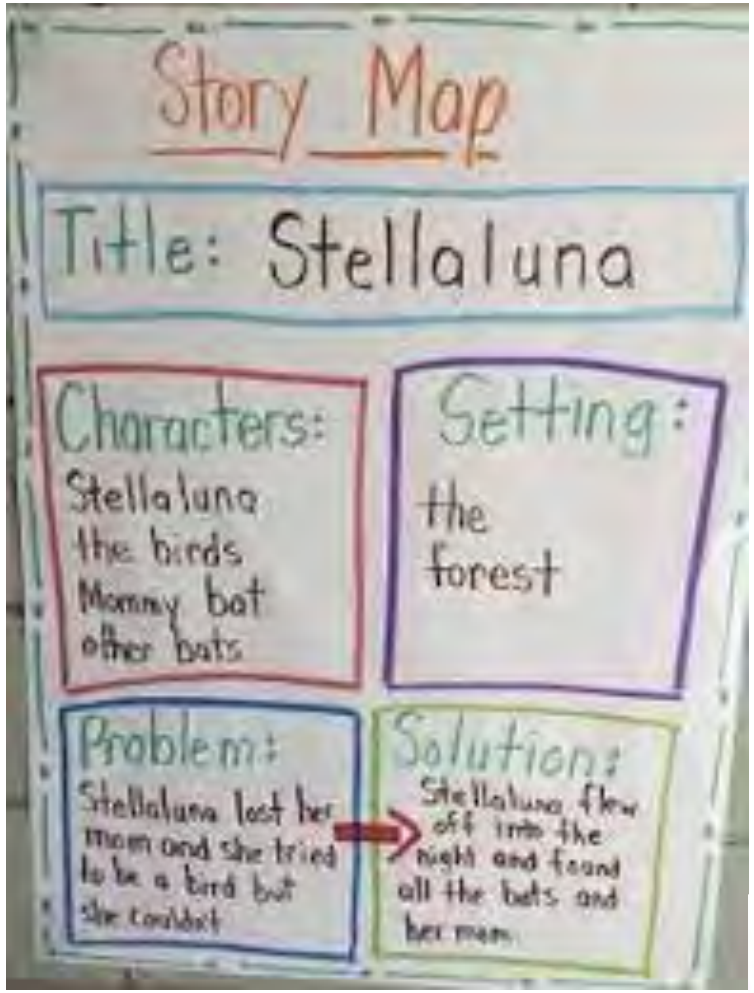


Summarizing: Strong Evidence

Note-taking can be a powerful bridge to summarizing text. Taking notes during reading forces readers to shrink down ideas and put them in their own words.

Using a structured note-taking method helps readers keep their ideas organized and makes writing a summary easier.

- Two-column notes
- Outline notes
- Concept mapping
- Story mapping



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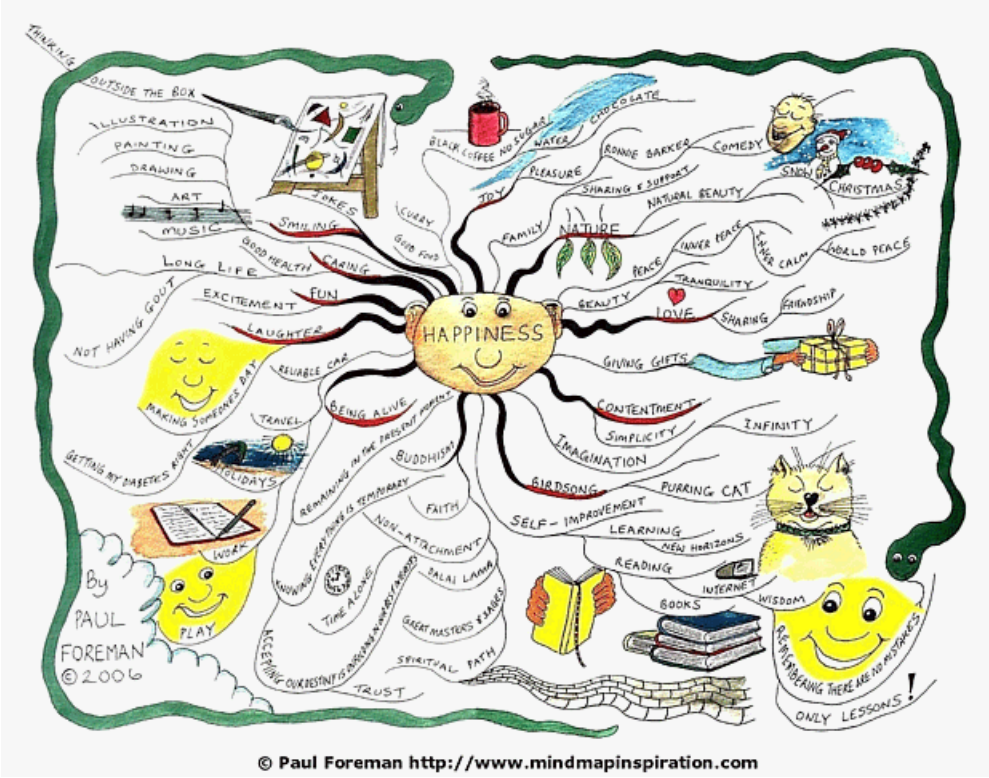
Animal

Summarizing: Strong Evidence

Concept Mapping

- Concept maps illustrate how ideas are related.
- By taking notes in the form of a concept map, readers can organize their thinking and synthesize text more effectively.



Summarizing: Strong Evidence

Story Mapping

Readers improve their ability to retell and summarize stories and to transfer these abilities to other stories when they think about story elements

- setting
- characters
- problem
- event sequence (attempts)
- solution

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Story Map

Title: _____ **Author:** _____

Characters

Setting

Main Events

Conflict

Resolution

Themes

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Comprehension Strategies

Other strategies with moderate evidence

- Making Connections (McMaster, Espin, & van den Broek, 2014)
- Leaving Tracks of Thinking (Goldschmidt, 2010; Porter-O'Donnell, 2004)
- Visualizing (de Koning, & van der Schoot, 2013; Pressley, 2002)

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Making Connections: Moderate Evidence

- Help students make use of personal experiences to enhance their understanding of the text they read.
- "Nudge them into thinking about bigger more expansive issues beyond their universe of home, school, and neighborhood."

(Harvey & Goudvis, 2000)

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Making Connections: Moderate Evidence

- Enhancing understanding through personal and collective experience
- It reminds me of…
  - Text-to-Self
  - Text-to-Text
  - Text-to-World

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Making Connections: Moderate Evidence

Text-to-Self

- Model T-S connecting by reading and thinking aloud about your own text connections.
- Select books with characters of similar ages and situations as your students.
- Have students use sticky notes to code T-S and write about their connection with the text.

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Making Connections: Moderate Evidence

Text-to-Text

- Compare the following between texts:
  - characters' personalities and actions
  - story events and plots
  - different versions of familiar stories
  - lessons, themes, or messages
  - treatment of themes by various authors
  - information from various sources

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Making Connections: Moderate Evidence

Text-to-World

- focus on connections between stories and real life events
- link to current world events or knowledge of historical events
- consider connections to "big ideas" and overarching themes

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Cynthia
Rylant

Leaving Tracks of Thinking: Moderate Evidence

- Teach readers to leave tracks of their thinking for themselves and for teacher assessment.
  - Margin notes
  - Post it notes
  - Note pages
  - Highlighter tape
  - Learning logs
  - Response journals
- Teachers record student thinking to help remind them of what they have learned.
  - Anchor charts

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Thinking Tracks Coding Key

?	Question
!	Reaction
P	Prediction
C	Connection (T-T, T-S, T-W)
V	Visualization 
S	Summary
I	Inference
MI	Main Idea
L	New Learning

Use this key to guide the coding of your thinking tracks!

Visualizing: Moderate Evidence

- Creating visual imagery or “mental movies” while reading can support comprehension
- Helps the reader make text-to-self connections and, therefore, activate prior knowledge
- Seems to be most effectively taught through listening activities

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Reading Strategies

- Strategy instruction may lead to a shallow representation of a text and may interfere with the deeper processing of its content (Elleman & Compton, 2017).
- Without strong content knowledge, metacognitive strategies may provide minimal assistance to the reader in understanding the text (Willingham, 2006).
- Getting students to actively build meaning while reading does not necessitate knowledge of and focus on specific strategies, but, rather it may require attention to text content in ways that promote attending to important ideas and establishing connections between them (McKeown, Beck, Blake, 2009).

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Key Take-away:

Strategy instruction has a limited impact on comprehension and should be limited to strategies worth teaching.

Questions?