



Fact Not Fiction: The Science of Reading Includes Comprehension Instruction

Nancy Hennessy M.Ed.

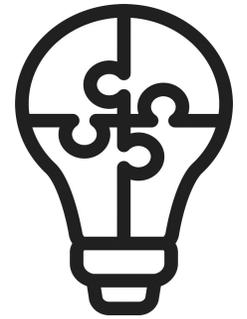
Higher Education Literacy Partnership Of Minnesota (HELP)

April, 2024

Together...

- ✓ Learn what the science tells us about the complexity of comprehension and the implications for instruction.
- ✓ Identify the critical contributors including the language processes and skills and the knowledge necessary for making meaning of text.
- ✓ Learn about an instructional framework, aligned with the science, that addresses the multiple skills and knowledge base necessary to demonstrate and apply learning.
- ✓ Experience examples of instructional routines, strategies and activities for specific contributors to comprehension.

The science tells us...



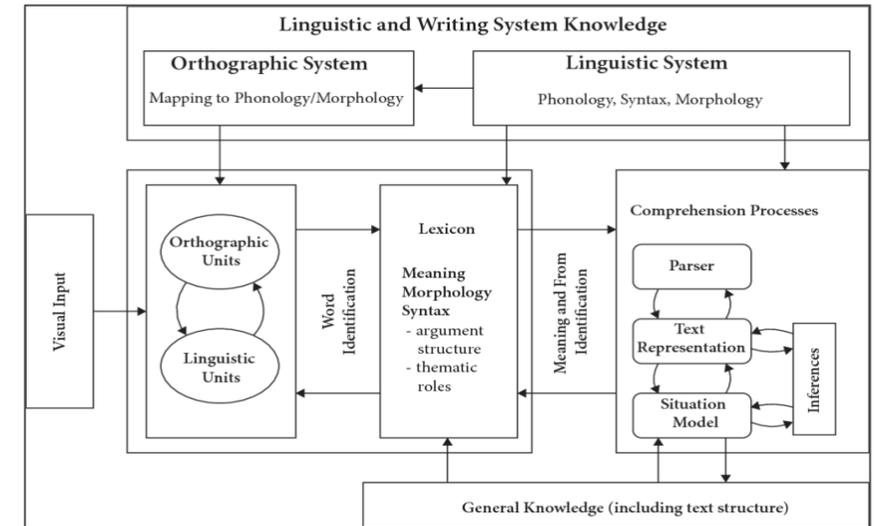
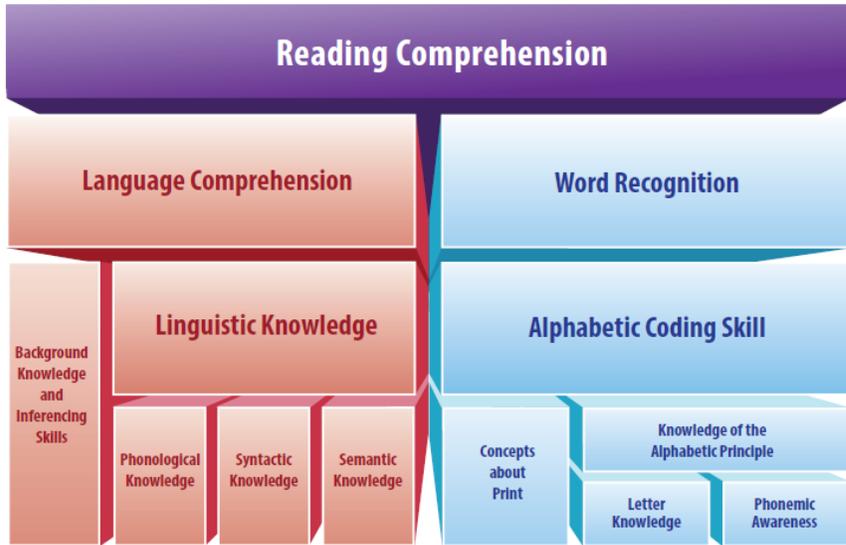
Reading Comprehension

*one of the most complex
behaviors*

not a skill

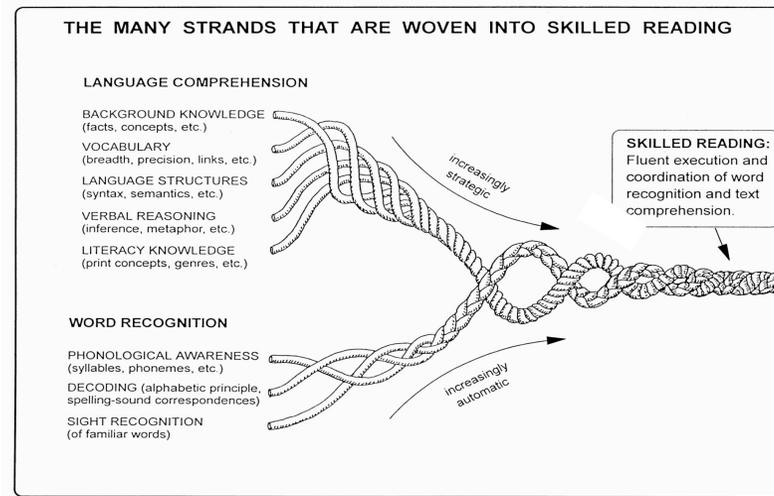
*dependent wide range of
skills and knowledge*

Catts, 2021



Hoover & Tunmer, 2020

Perfetti & Strafura, 2014



The Reading Rope
Scarborough, 2001

Not a single entity
Castles et al, 2018



....it is the orchestrated product of a set of linguistic and cognitive processes...

Castles et al, 2018

Process or Product:



A. indicators of what the reader knows and understands after reading is completed.

B. those cognitive and language activities by which the reader arrives at those products.



Products



Antonio-first grade
Stand Tall Molly Lou Mellon
**What was her
Grandmother's message?**

Kayla-fourth grade
Mystery of the Tattooed Mummy
**What were archaeologists looking
for?**

Matt-fifth grade
Tuck Everlasting
**Would you want to be immortal?
Why or why not?**

Maria-second grade
The Ants & the Grasshopper
**What do you know about ants
and how they behave?**

Jermaine-sixth grade
*The Founding of American
Democracy*
**Why did the Founding Fathers have
to compromise?**

Will-third grade
Dear Benjamin Banneker
**Was Benjamin an activist?
Why or why not?**

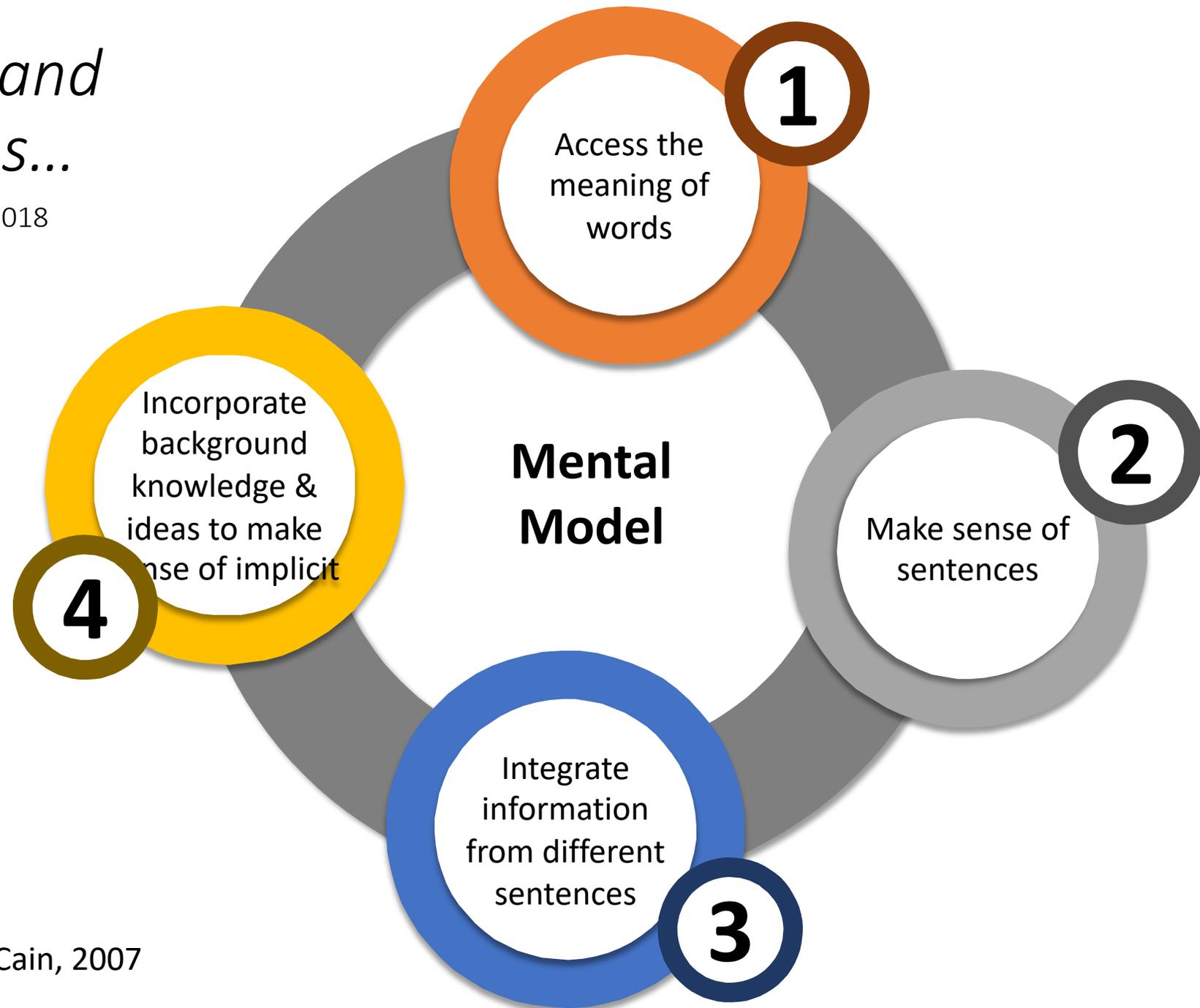


Hennessy, 2020



...a set of linguistic and cognitive processes...

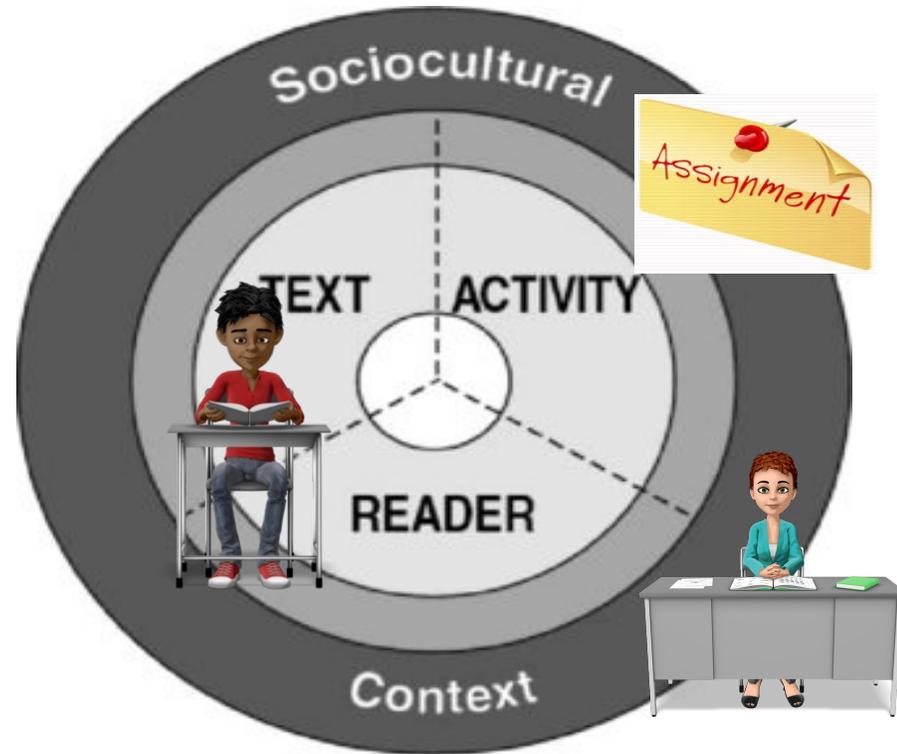
Castles et al, 2018



Oakhill & Cain, 2007

...operating on text
and interacting with
background
knowledge, features
of the text, and the
purpose and goals
of the reading
situation.

Castles et al, 2018



The Rand Reading Study Group Report
Heuristic, 2002

Consider the demands of the text...

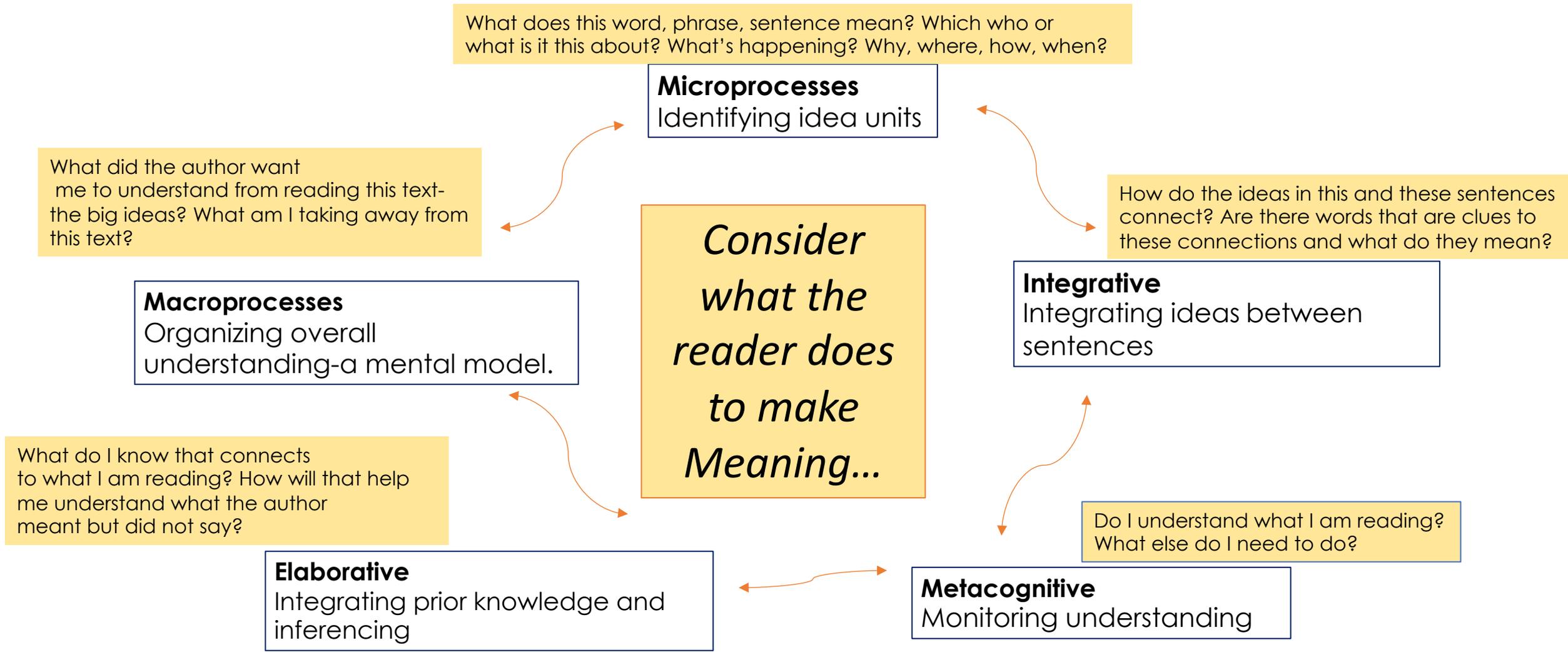


Persepolis, 2000

Meanings of words like *capitalism*, *decadence*, *veiled*, and *Western culture*

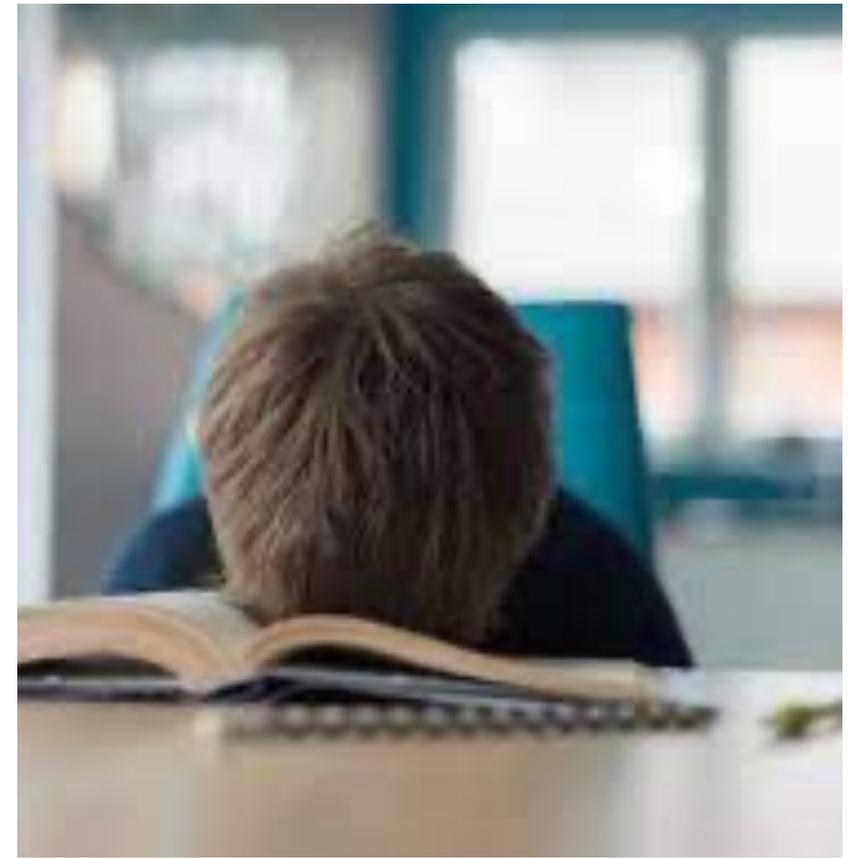
Knowledge of Iran's "Cultural Revolution" and its impact on people's freedom, education, and livelihoods.

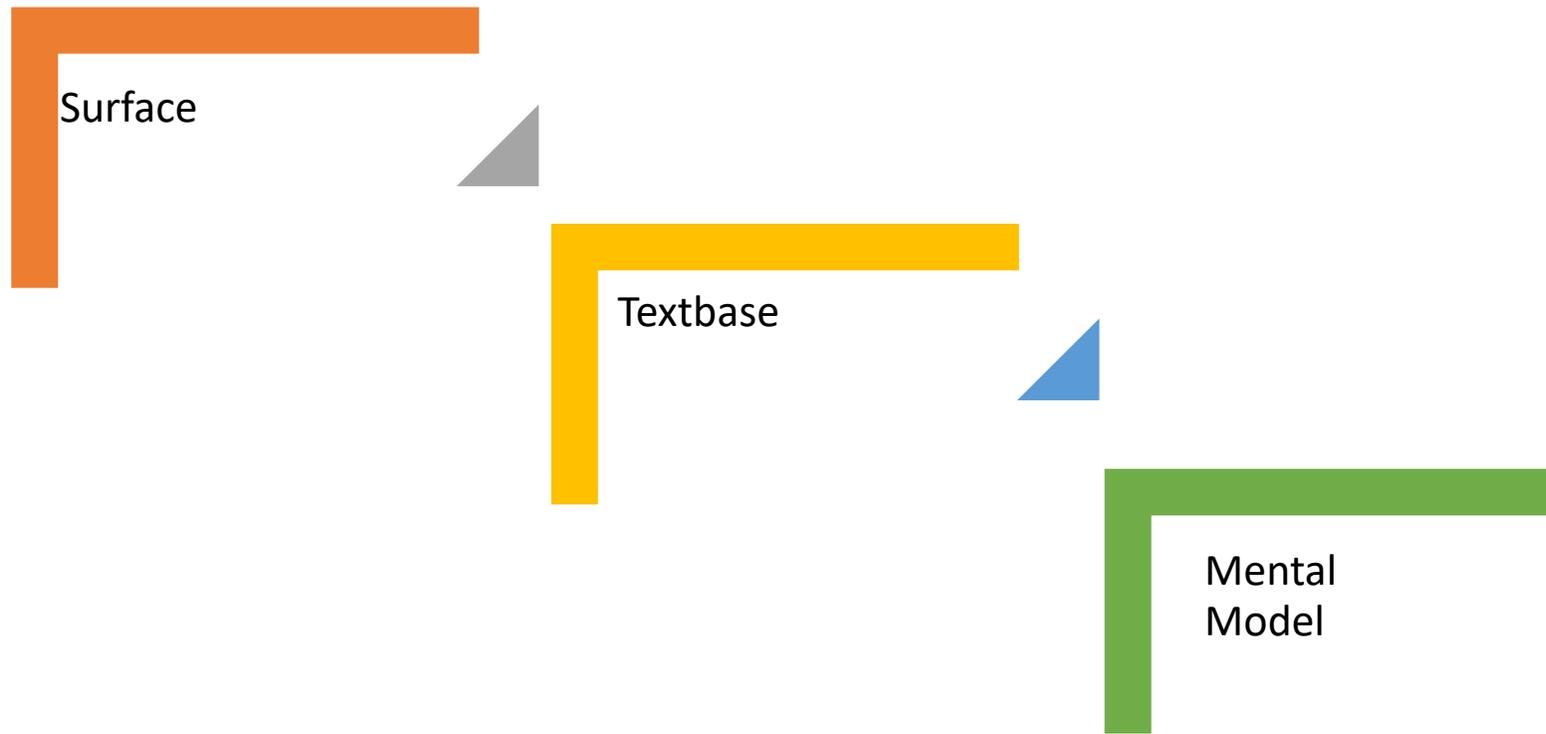
Understanding of the graphic novel format, including the use of structures like panels, speech & thought bubbles, and captions



When a child is repeatedly unsuccessful in comprehending texts that he/she has read, this suggests reading difficulties at the processing level. These difficulties can manifest themselves in various ways: failure to recall the main points of a story, failure to answer literal and/or inferential questions, failure to complete the actual reading of the text, and so on.

Kendeou et al, 2014





Skilled readers use both language and cognitive processes to integrate successive units of meaning at the surface and text base.

This is necessary for constructing a situation or mental model of the text.

The mental model is the reader's overall understanding of the situation expressed in the text. The reader stores this in memory and hopefully, accesses it for future application.

ULTIMATE GOAL: KNOWLEDGE

Check Out & Connect:

How has this discussion influenced your thinking about the science of comprehension?



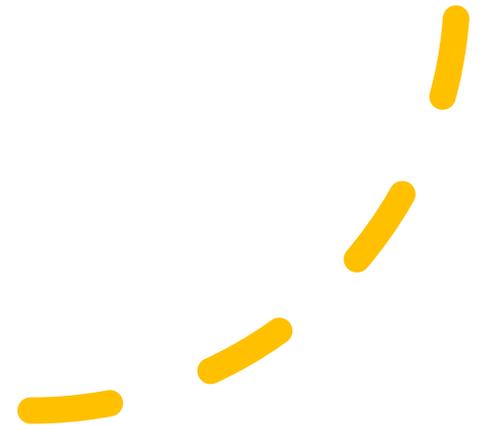
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- ✓ Experience examples of instructional routines, strategies and activities for specific contributors to comprehension.



Contributors
to
Comprehension

Based on the science and complexity of comprehension and increasing literacy demands across the grades what could an informed framework or blueprint for constructing meaning include...



Aligned with the Science



Structures & Scaffolds Instruction

Processes & Products

Informed Routines, Strategies & Activities

Fidelity with Flexibility

Metacognitive

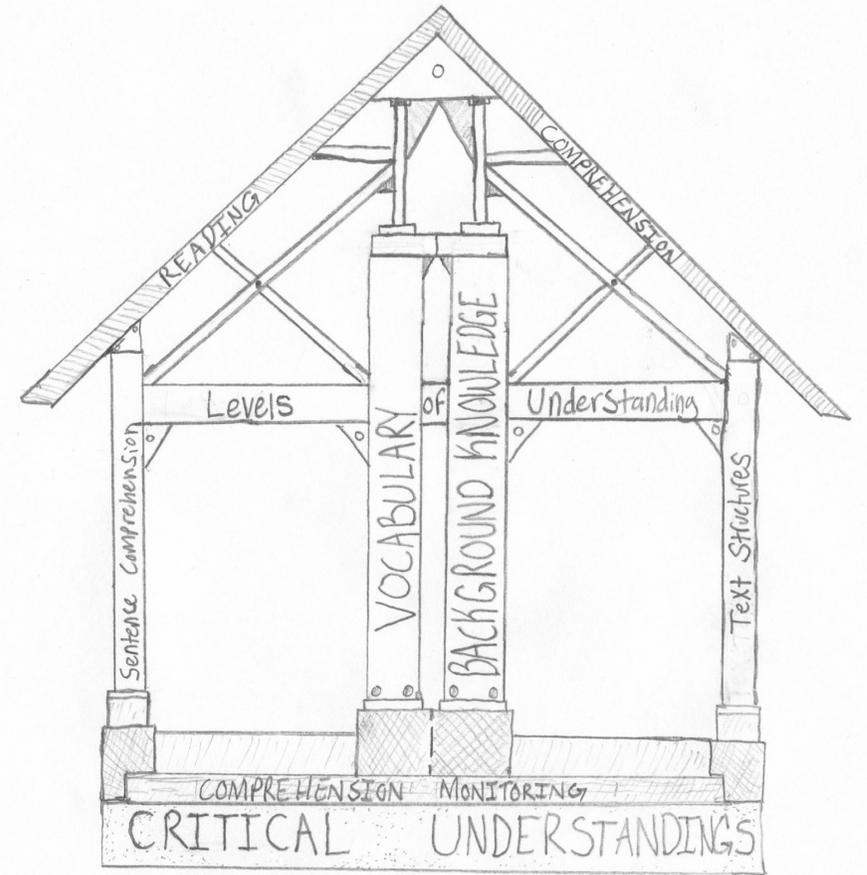
Blueprint for Comprehension Instruction	
PREPARING FOR INSTRUCTION CRITICAL UNDERSTANDINGS OF TEXT	What do you want students to know and understand after reading the text? What are the critical concepts and understandings—big ideas you want your students to acquire? What texts will support these understandings?
PURPOSE FOR READING TEXT	What are the content instructional goals and objectives? What are the literacy instructional goals and objectives?
TEXT READING VOCABULARY	Which words will your students need to know? Which are worth knowing? Which ones will you intentionally target and directly teach? Which ones will you incidentally-on-purpose teach? How, when? Which words will you purposefully discuss and incorporate into expressive language activities? How and when will you teach and foster the use of independent word learning strategies?
LANGUAGE STRUCTURES (phrases, clauses, sentence comprehension)	Are there phrases, clauses, and sentence structures that may be difficult for your students? How and when will you directly teach sentence comprehension? How and when will you teach students to work with challenging sentences? How will you facilitate the integration of ideas within and between sentences, e.g., the use of cohesive ties and connectives? How and when will you teach students to work with these?
KNOWLEDGE • Text structure • Background knowledge	How is the text organized? How and when will you directly teach students the purpose, features, and signal words of different genres? How will you teach students to use the structure to understand purpose? To organize and express their understanding? What background knowledge is critical to understanding the text? How and when will you teach students to access and build their knowledge and integrate it with the text?
LEVELS OF UNDERSTANDING AND INFERENCE	How will you teach students to construct meaning at different levels of understanding, including the surface code, textbase, and mental model of text? How will you directly teach students to use inference to integrate ideas and connect background knowledge to the text? How will you support your students' deep comprehension of text?
EXPRESSION OF UNDERSTANDING	What strategies and activities will you use for students to demonstrate understanding at different levels during and after reading? How will you support their oral and written expression of understanding?

The Reading Comprehension Blueprint by Nancy Lewis Hennessy.
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A Framework: Reading Comprehension Blueprint

Critical Understandings & Purpose

- *What do you want your students to know, understand and be able to do?*
- *What are your content and literacy goals & objectives?*



Prepping for Instruction

Tips for Success



Critical understandings share several characteristics including:

- *They connect to big ideas that have a lasting impact beyond the classroom.*
- *Are transferrable to other subject areas and disciplines.*
- *They go beyond facts and provide a foundation for helping students make deeper connections.*
- *Are reoccurring and can be revisited and built upon over time.*

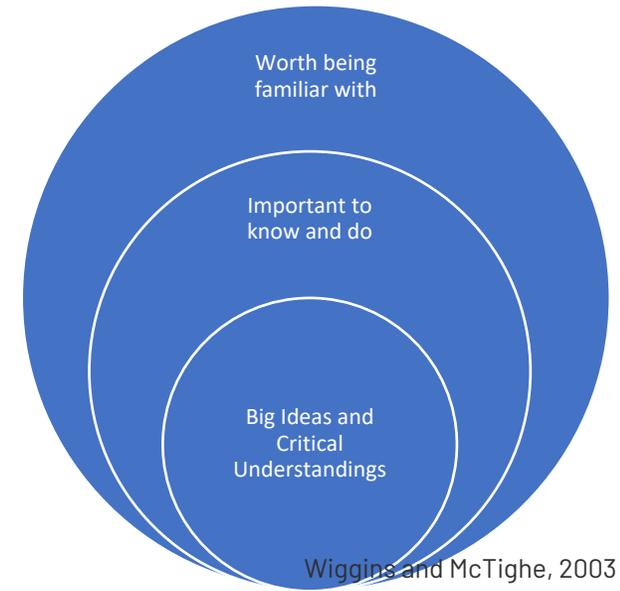
Critical Understandings

Grade 1: All About Me!

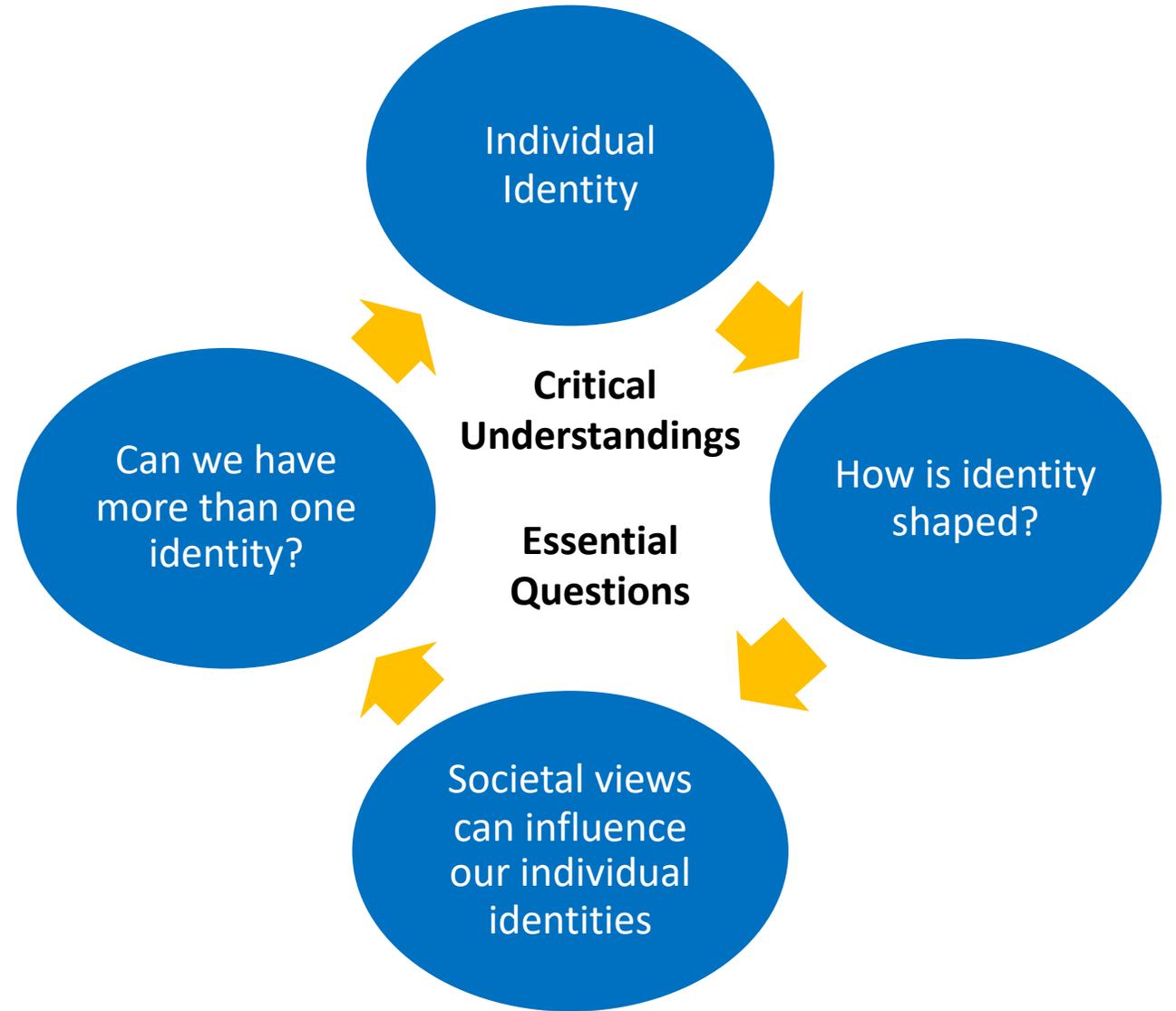
- I am unique; there is no one else like me.
- I have likes and dislikes.
- I have strengths and challenges.
- I am part of a family and a classroom community.
- My family is unique.
- All of the people in my class are unique, have their own interests, and can do different things.

Grade 8: Who am I?

- Individual identities are complex and show themselves in many ways.
- Everyone has multiple identities.
- Societal views can influence individual identity.
- Our identities have similarities and differences.
- It's important to see my identities as well as the identities of others reflected in the world around me.



Purpose



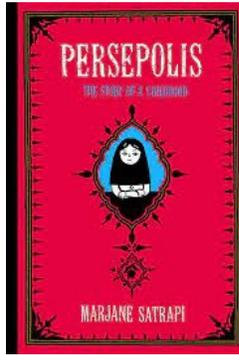
Literacy Goals



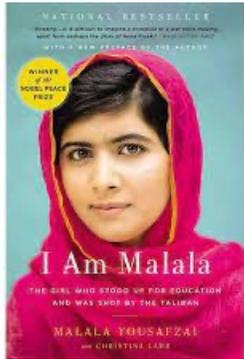
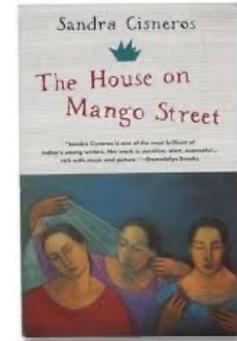
Content Goals

Choosing purposeful readings...

Persepolis by Marjane Satrapi



The House on Mango Street by Sandra Cisneros



I Am Malala: The Girl Who Stood Up for Education and Was Shot by the Taliban by Malala Yousafzai

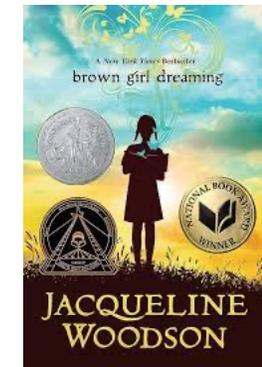


"Fish Cheeks" by Amy Tan

"The Jacket" by Gary Soto



Brown Girl Dreaming by Jacqueline Woodson



Critical Understanding: Individual identities are complex and show themselves in many ways.

Your Readings...



Yes or No?

___ *Do your readings support the development of knowledge?*

___ *Do your readings provide opportunities to develop necessary language processes and skills?*

___ *Do your texts provide opportunities to develop and apply academic language skills to text ?*

___ *Do your readings represent different genre, disciplines, the interests and experiences of your readers, are culturally responsive?*

___ *Have you considered access issues for struggling readers?*

Hennessy, 2020

Before, During & After Instruction

Intentional & Incidental on Purpose

Teach, Model, Practice & Apply

Evidence based instructional routines, strategies and activities in the service of developing processes necessary for quality products

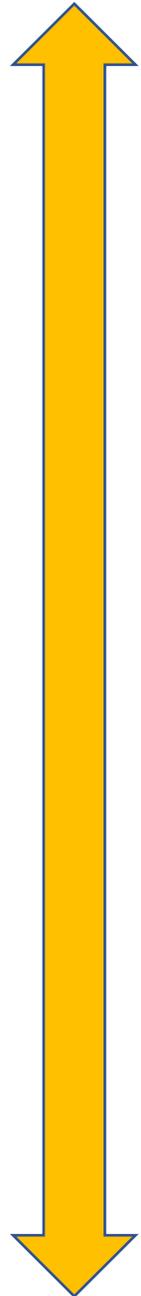
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Comprehension Monitoring

...the reader's ability to reflect on their understanding of a written text.

LARCC, 2017



Why...

Word meaning

Sentence meaning

Knowledge

Paragraph/section meaning

Purpose

Engagement

So...

Think about using your independent word learning strategies (dictionary, morphemes, context) to figure out what the word means.

*Reread & ask yourself:
-Where is the who or what and the do in the sentence?
-What words are standing in or substituting for important words in the sentences?*

*Think about what you know and make connections.
Look up or ask for additional information about the topic.*

*Reread the paragraph & ask yourself:
-What is this all about?
-What does it tell me?*

Ask yourself about the text structure. Is it narrative or expository? Think about how each is organized-elements. Look for signal words.

*Tell yourself to stop at the end of a section or page to:
-summarize
-annotate
-visualize
-question*

Hennessy & Salamone, 2024

Check Out & Connect:

How has this discussion connected to your current instructional framework or practices?



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Blueprint for Comprehension Instruction

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What are the literacy instructional goals and objectives?

TEXT READING VOCABULARY

Which words will your students need to know? Which are worth knowing?
Which ones will you intentionally target and directly teach? Which ones will you incidentally-on-purpose

Reading & Comprehending the Text

language activities?
strategies?

LANGUAGE STRUCTURES (phrases, clauses, sentence comprehension)

Are there phrases, clauses, and sentence structures that may be difficult for your students?
How and when will you directly teach sentence comprehension? How and when will you teach students to work with challenging sentences?
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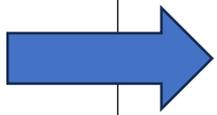
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How will you support your students' deep comprehension of text?

EXPRESSION OF UNDERSTANDING

What strategies and activities will you use for students to demonstrate understanding at different levels during and after reading?
How will you support their oral and written expression of understanding?

Before, During, and After Reading: Strategic Comprehension Monitoring



Knowledge



A writer must always rely on the reader's knowledge to some degree. There is no text comprehension that does not require the reader to apply: lexical, syntactic, semantic knowledge, domain knowledge, personal experience, and so on.

Kintsch, 1998

Background knowledge is specific to the situations, problems, and concepts presented in targeted texts used in an academic setting.

Brody, 2001



- *provides a framework for organizing incoming information and guides us as we read through a text.*
- *allows us to make inferences and fill in information that is not explicitly provided.*
- *is the most critical component of critical thinking.*
- *allows us to make the most use of our working memory.*

Catts, 2022

Text Knowledge

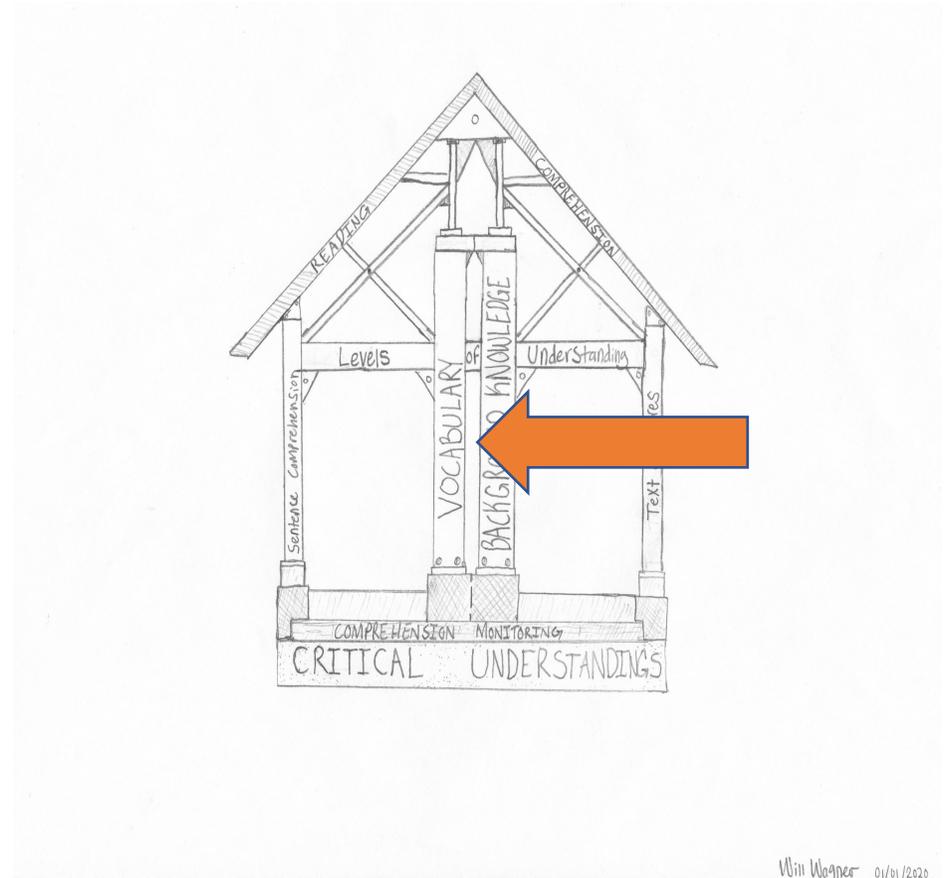
How is the text organized?

- ✓ How and when will you directly teach the purpose, features, and signal words of different genres?
- ✓ How will you teach students to use the structure to understand purpose? To organize and express their understanding?

Background Knowledge

- ✓ What background knowledge is critical to understanding the text?
- ✓ How and when will you teach students to access, build their knowledge and integrate it with the text?

Implementing the Blueprint: Knowledge



0-Never

1-Sometimes

2. Always

___ *What is necessary for understanding the critical topics and understandings represented in this text?*

___ *What did the author assume readers would bring to the text?*

___ *How will I activate or gain access to my students' knowledge?*

___ *Given what my students know, what else might my students need to know?*

___ *How will I facilitate the building of necessary knowledge?*

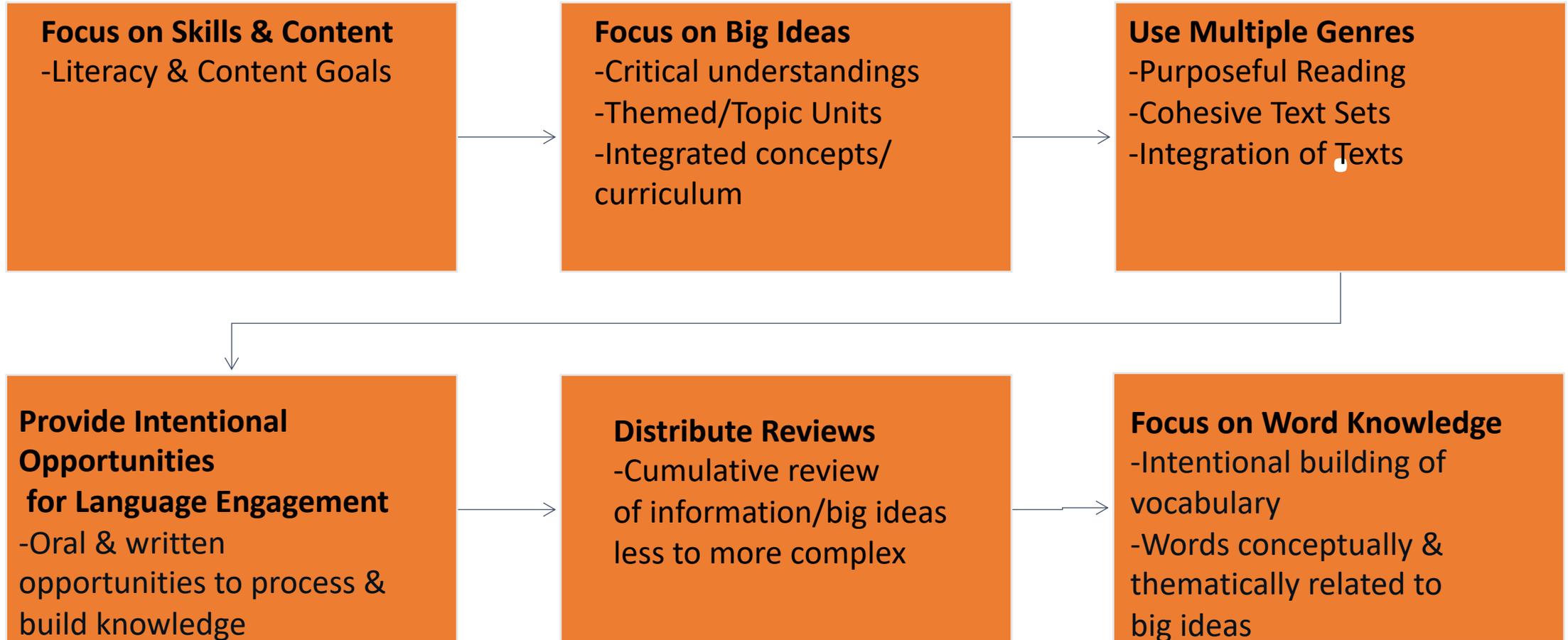
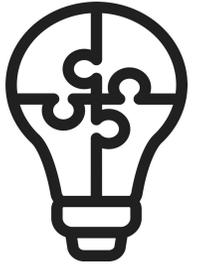
___ *How will I prompt students' integration of background knowledge with the text?*

Hennessy, 2020

How often or not do you consider the planning questions indicated?



General Instructional Principles



Based on Neuman, 2019 & Cabell, 2023

Informed Instructional Approach: ABCs Background Knowledge

Hennessy, 2020

Activate and assess background knowledge	Build background knowledge	Connect to background knowledge
Anticipation guides	Multiple topical/themed texts	Anticipation guides
Questions and prompts	Virtual and real-time experiences	Questions and prompts
Charts, webs, maps	Authentic artifacts	Charts, webs, maps
Visual images	Vocabulary connections	Application to other readings

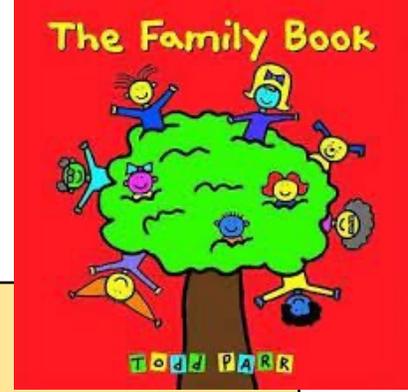
Activate & Access

✓ Anticipation guides

✓ *Questions and prompts*

✓ *Charts, webs, maps*

✓ *Visual images*



Before Reading		After Reading			
Agree	Disagree	Statement		Agree	Disagree
		A family often includes children and the grownups who care for them.			
		Families are a loving community.			
		There are different ways to be a family.			
		Family members have the same roles and responsibilities			

I am part of a family and a classroom community.

Activate & Access

- ✓ *Anticipation guides*
- ✓ *Questions and prompts*
- ✓ *Charts, webs, maps*
- ✓ *Visual images*

What do you already know about [topic/enduring understanding/big idea]?

What experiences have you had related to [topic/enduring understanding/big idea]?

What do you think it would be like to live _____ (place) during _____ time?

Do you know what it is like to be _____ (characteristic or quality)?

Do you remember reading or learning about _____ (connections to other readings)?

Based on what you know about _____ (topic), what might _____ (text, passage) be about?

What type of text is this? Have I seen this type of text before?

All About Me!	Who Am I?
<ul style="list-style-type: none"> • <i>Leo the Late Bloomer</i> by Robert Kraus • <i>Eyes that Kiss the Corner</i> Joanna Ho • <i>Chrysanthemum</i> by Kevin Henkes • <i>Frederick</i> by Leo Leoni • <i>The Proudest Blue</i> by Ibtihaj Muhammad • <i>We are all Wonders</i> by R. J. Palacio • <i>The Best Part of Me</i> by Wendy Ewald • <i>It's Okay to be Different</i> by Todd Parr • <i>The Day You Begin</i> by Jacqueline Woodson • <i>Fry Bread</i> by Kevin Noble Maillard • <i>Hair/Pelitos</i> by Sandra Cisneros • <i>Too Many Tamales</i> by Gary Soto • <i>Bee-Bim Bop!</i> by Linda Sue Park • <i>The Family Book</i> by Todd Parr • <i>Last Stop on Market Street</i> by Matt de la Peña • <i>All are Welcome</i> by Alexandra Penfold 	<ul style="list-style-type: none"> • <i>Persepolis</i> by Marjane Satrapi • <i>American Born Chinese</i> by Gene Luen Yang • <i>El Deafo</i> by Cece Bell • <i>A Long Way Gone: Memoirs of a Boy Soldier</i> by Ishmael Beah • <i>Red Scarf Girl: A Memoir of a Cultural Revolution</i> by Ji-li Jiang • <i>I Am Malala: The Girl Who Stood Up for Education and Was Shot by the Taliban</i> by Malala Yousafzai • <i>Brown Girl Dreaming</i> by Jacqueline Woodson • "The Jacket" by Gary Soto • Various chapters from <i>The House on Mango Street</i> by Sandra Cisneros • "Fish Cheeks" by Amy Tan • "When I was Puerto Rican" by Esmerelda Santiago • "Richard" by Allie Brosh

Build

- ✓ Multiple topical/themed texts
- ✓ Virtual and real-time experiences
- ✓ Authentic artifacts
- ✓ Vocabulary connections

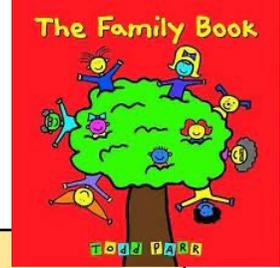
Build

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- ✓ Authentic artifacts
- ✓ Vocabulary connections

The image can be used to accompany an American History unit on child labor and human rights. It is from the Library of Congress' Lewis Hine collection and depicts a "tipple boy", one of the child laborers who worked the tipple, a structure used to load coal into railway cars. Using this image, brainstorm a series of questions that could be used to activate learners' background knowledge and prepare them to learn more about this topic.



Hennessy & Salamone, 2024



Connect

- ✓ Anticipation guides
- ✓ Questions and prompts
- ✓ Charts, webs, maps
- ✓ Application to other readings

Before Reading			After Reading	
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I am part of a family and a classroom community.

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Hennessy, 2020

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Charts, webs, maps	Authentic artifacts/visual images	Charts, webs, maps
Visual images	Vocabulary connections	Application to other readings

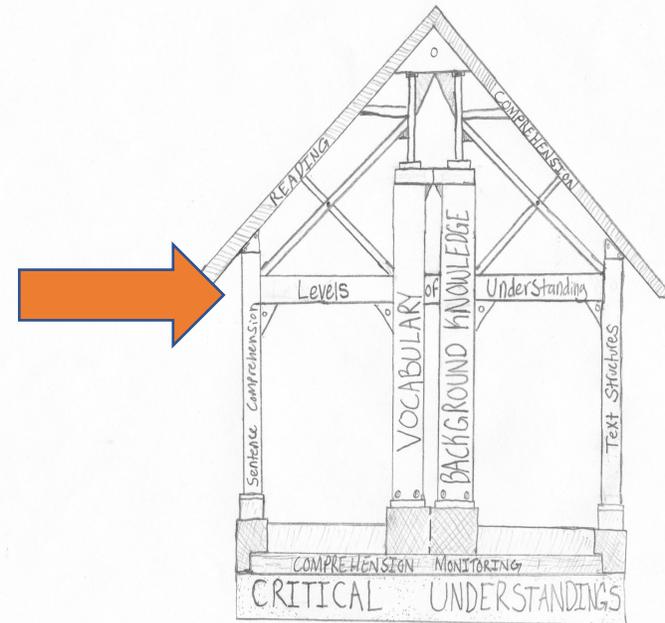
Connect: What do your ABCs look like?



- ✓ How will you teach students to construct meaning at different levels of understanding including the surface, textbase, and mental model?
- ✓ How will you directly teach students to use inference to integrate ideas and background knowledge to the text?
- ✓ How will you support your student's deep comprehension of text?

Hennessy, 2020

Implementing the Blueprint: Inference



Will Wagner 01/01/2020

Inference



...identification of meaningful relations between the various parts of the text, and between those parts and the reader's background knowledge.

In linguistics, cognitive psychology and education, researchers consider inference as a central component in language comprehension and essential to reading comprehension.

Elleman, 2017

Global Coherence Inferences

- ✓ are knowledge-based.
- ✓ fill in the gaps and make the text cohere.
- ✓ establish the connections in text and links with mental model.

Readers use
global inferences
to...

___ *understand the cause of events.*

___ *predict future actions.*

___ *identify setting.*

___ *identify character's motives, beliefs, traits.*

___ *understand character relationships.*

___ *draw conclusions.*

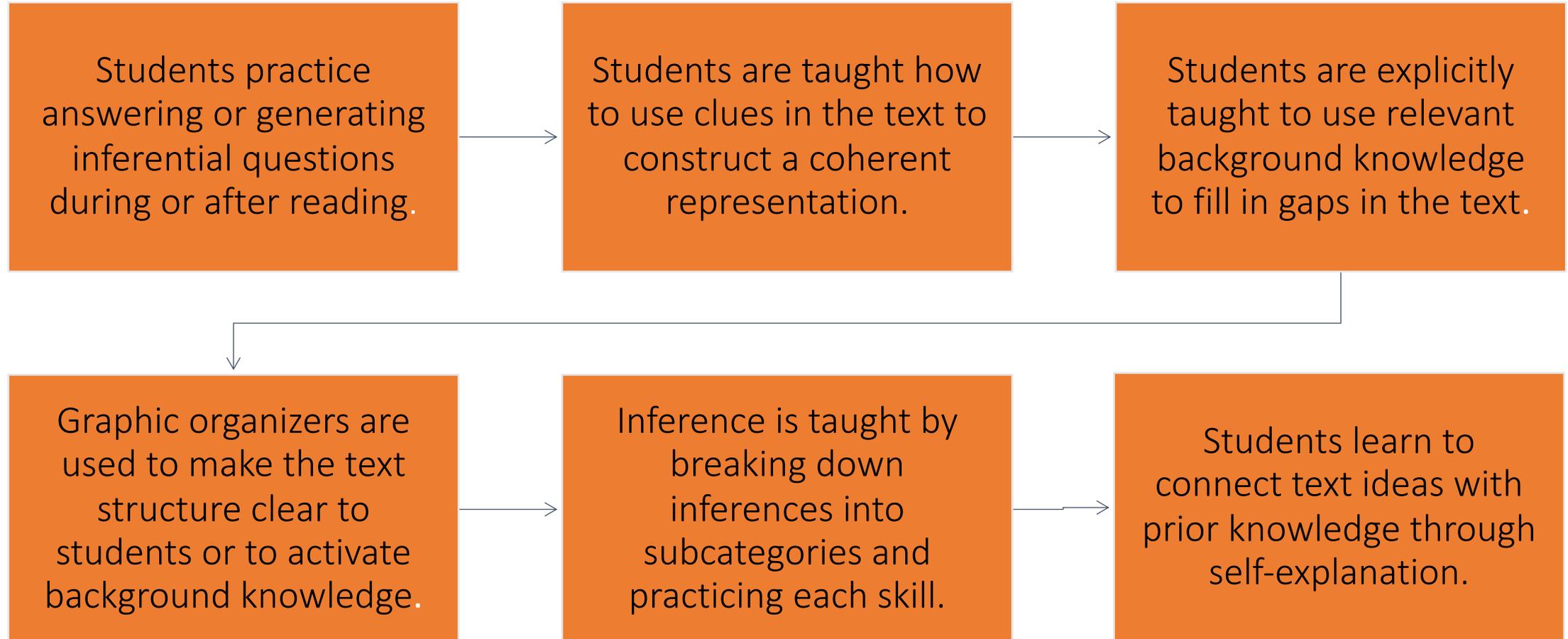
___ *understand author's view and/or biases.*

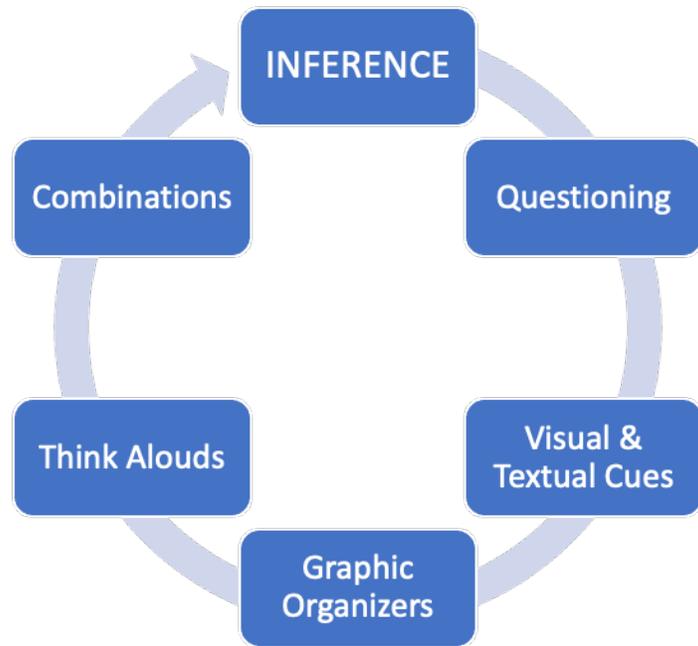
Subcategories...

The Inference Attuned Teacher: Connect to the Science...



Elleman, 2017





Hennessy & Salamone, 2024

Instructional Routine:

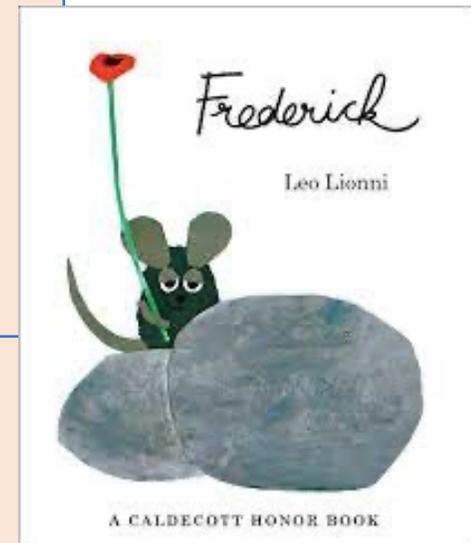
- ✓ *Identify & prepare the text (picture).*
- ✓ *Frame inferential questions/prompts.*
- ✓ *Model strategies, activities, clues that prompt integration of background knowledge.*
- ✓ *Model response to questions/prompts.*

Hennessy, 2020

What do we know about Frederick's personality?

Thoughts & Feelings Frederick thinks about ways to brighten the dark days of winter.	Description dreamy, a poet, creative
Actions Frederick gathers sun rays, colors, and words instead of corn, nuts, wheat, and straw. He writes poetry.	Words “I <i>do</i> work. I gather sun rays for the cold, dark winter days.” “I gather colors for winter is gray” “I gather words for the winter days are long and many, and we’ll run out of things to say.”

Frederick





1. Rosa Parks, 2015

2. These pictures were taken on a public bus in Montgomery, Alabama. They are connected to the story of Rosa Parks.

What do you notice about the passengers on the first bus? Who is sitting in the rear of the bus?

The person in the second picture is Rosa Parks? Where is she sitting?

Why?

3. In the first picture the people in the back of the bus are all African American. I know that they had segregation laws in the South in 1950s. African-Americans did not have the same rights as white people. For example, they had to sit behind white people on public buses. But in the second picture, Rosa Parks is sitting in front of a white passenger.

4. I think she is doing this purposefully and protesting a law that she does not feel is fair. I think she must have been protesting for her civil rights.

Understanding Cause



Scaffolded Organizer

My question
??

It says...



I know...



So I infer/think...



What do we know about the setting or the environment for Marjane in 1979 in Iran?

In 1979, a revolution took place... Then came 1980: the year it became obligatory to wear a veil at school. We didn't really like wearing the veil especially since we didn't understand why we had to. . and also because the year before we were in a French non-religion school where boys & girls were together... in 1980, we found ourselves veiled and separated from our friends.

That the Shah was overthrown and the Shia made the girls wear veil. Khomeini was the new leader & he was a dictator. He denied women equal rights and banned all Western culture.

That the setting or environment for women became more & more restrictive for women after 1979.

Hennessy & Salamoen,
2024

Keep in mind changes takes time.
Consider your current curriculum
and specific context.

A little bit at a time may be the best approach!

Final Check, Connect, Change: Next Steps?