

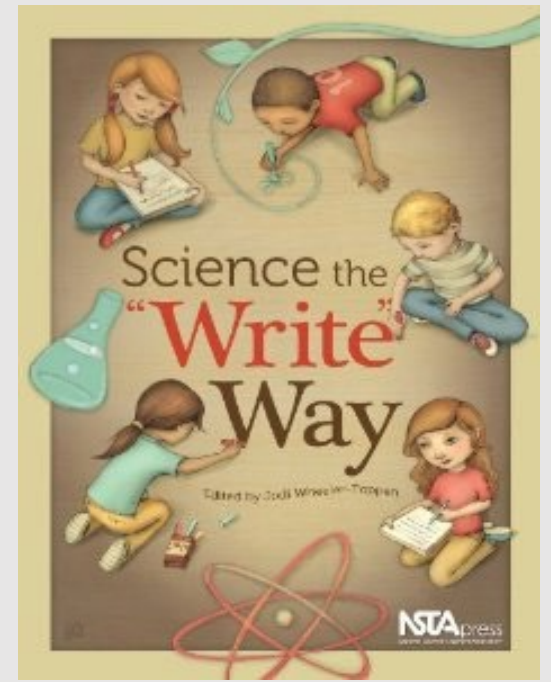
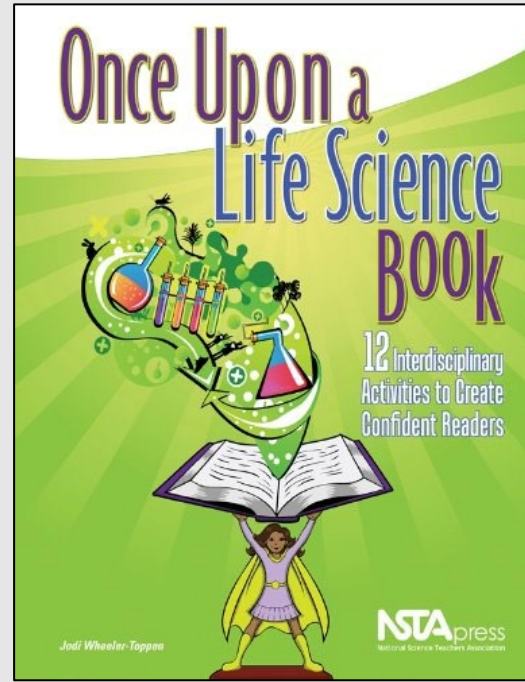
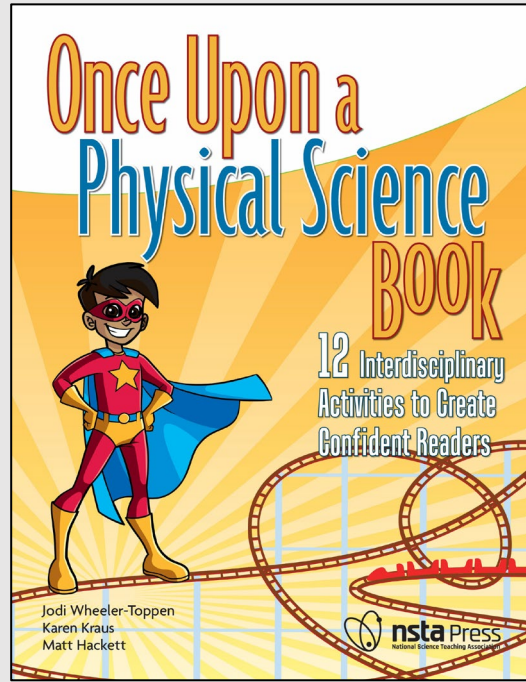
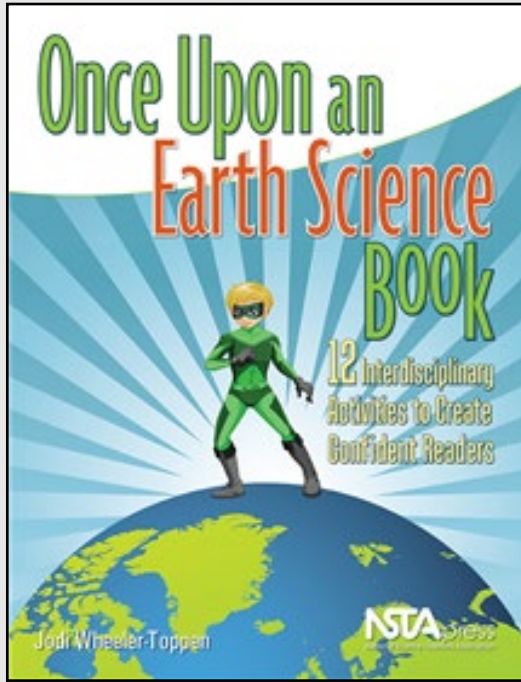
*Once Upon an Earth  
Science Book:  
Real Science, Real  
Literacy*

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Jodi Wheeler-Toppen, Ph.D.

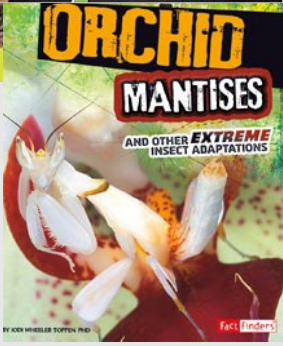
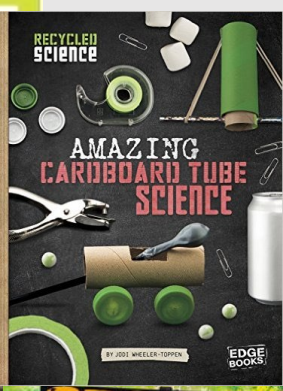
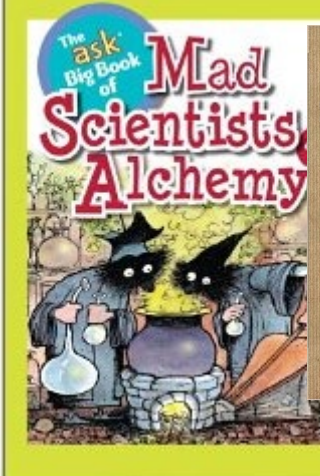
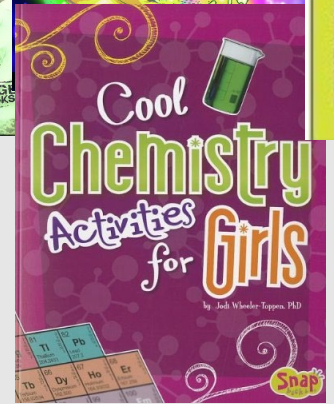
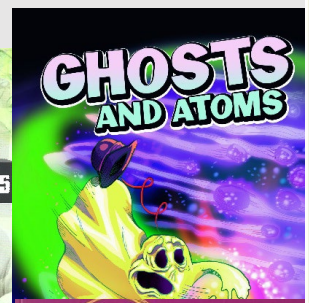
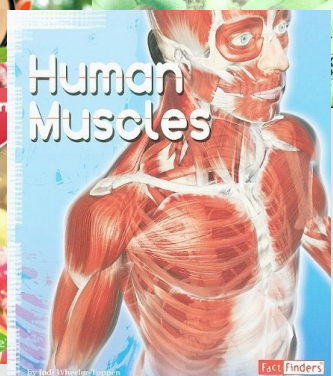
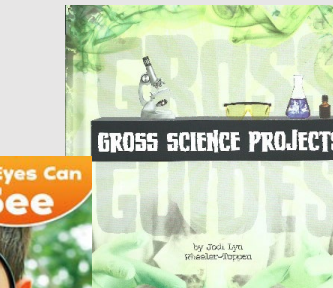
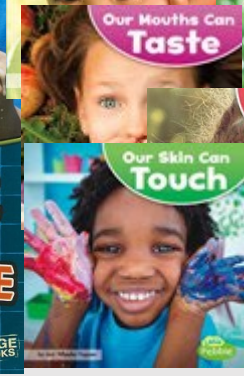
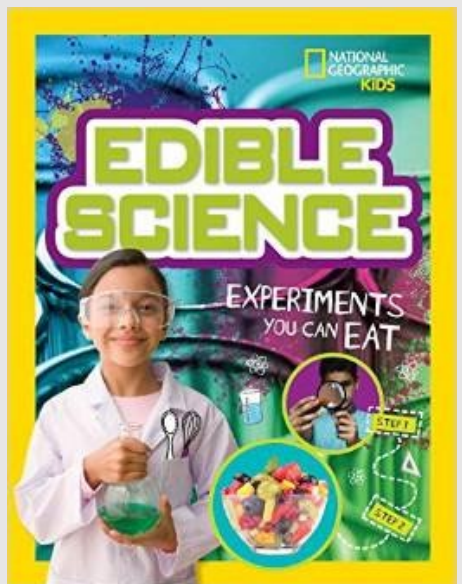
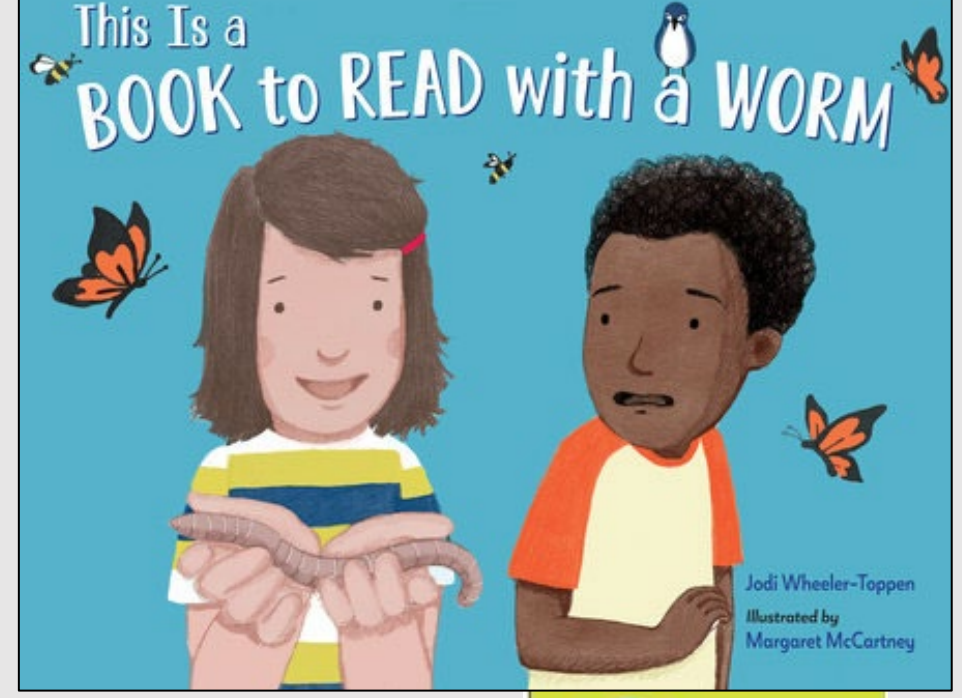
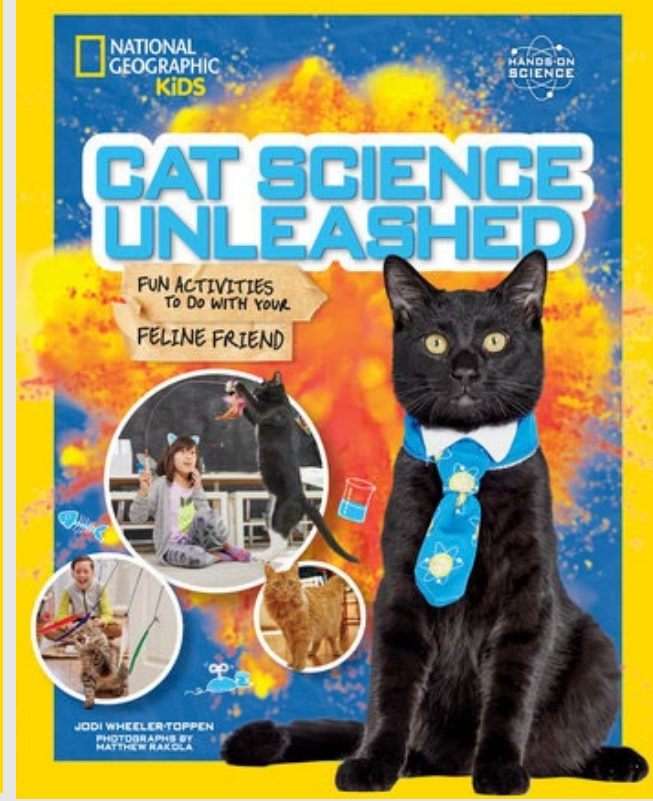
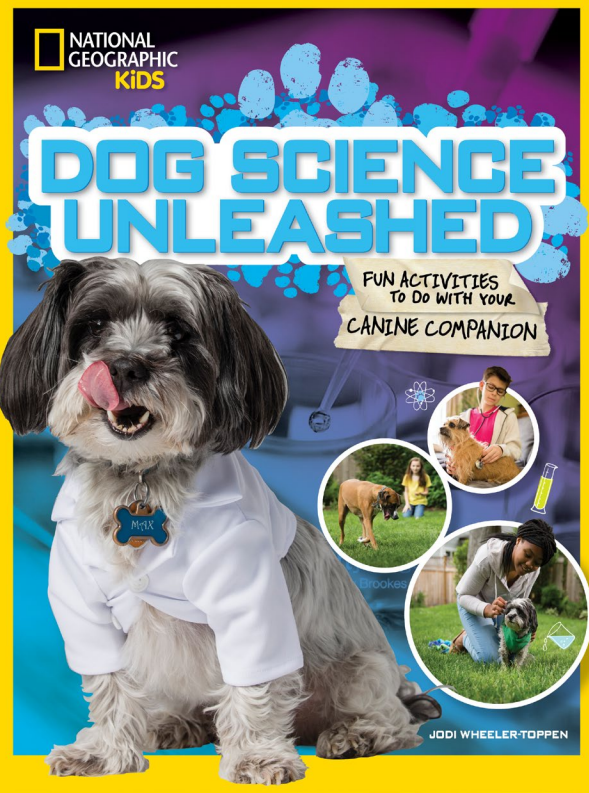


**Read. Write. Science!**



Who I am and  
How I ended up here







Find Powerpoint here.  
Also, sign up for newsletter!



OnceUponAScienceBook.com



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WheelerToppen



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Connect with Me

# Agenda

- Skip through a “Literacy Learning Cycle”
- Talk about how this type of lesson is structured (and why!)
- Dig in on reading challenges
- Find out about available resources to support this style of teaching

# Agenda

## 1. Literacy Learning Cycle: Trash Soup



Science

Reading

Writing

## 2. Literacy Learning Cycles

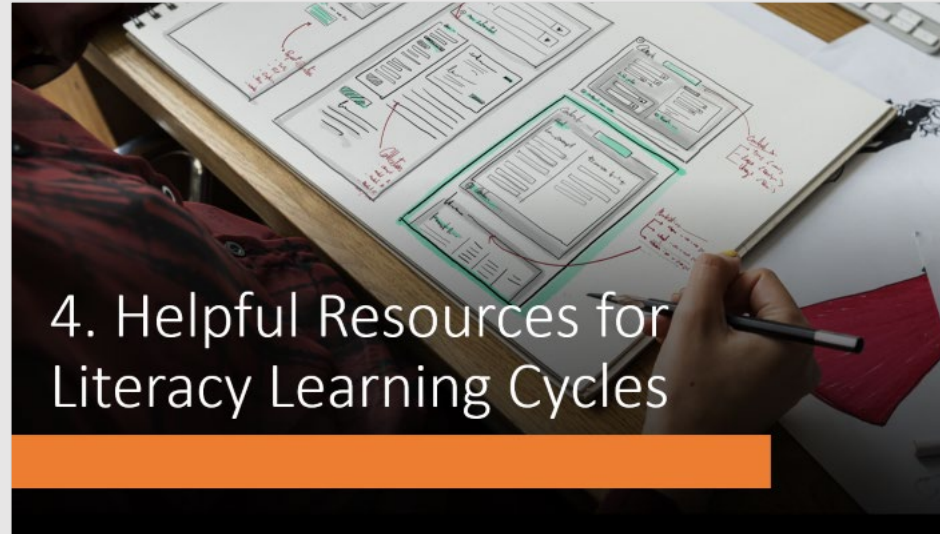
How this type of lesson is structured (and why!)

## 3. Digging Deeper on Reading: Three Impediments to Learning from Text

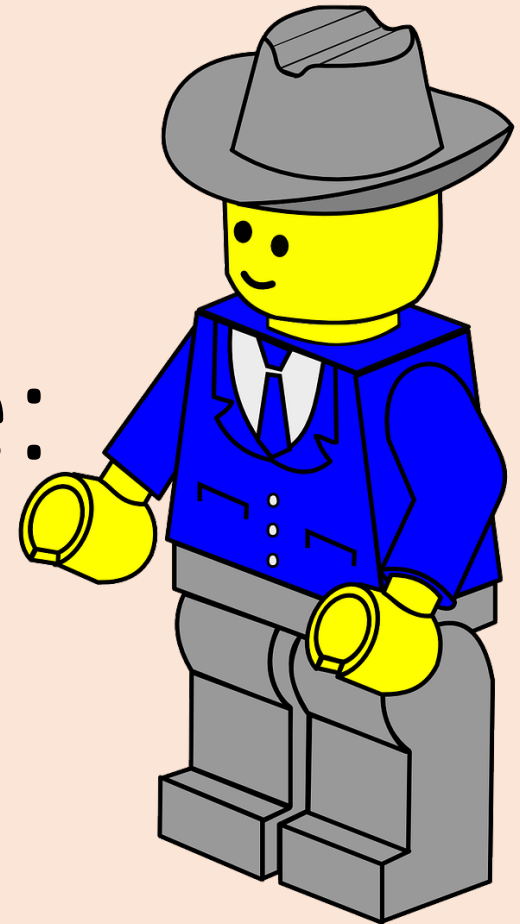
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## 4. Helpful Resources for Literacy Learning Cycles



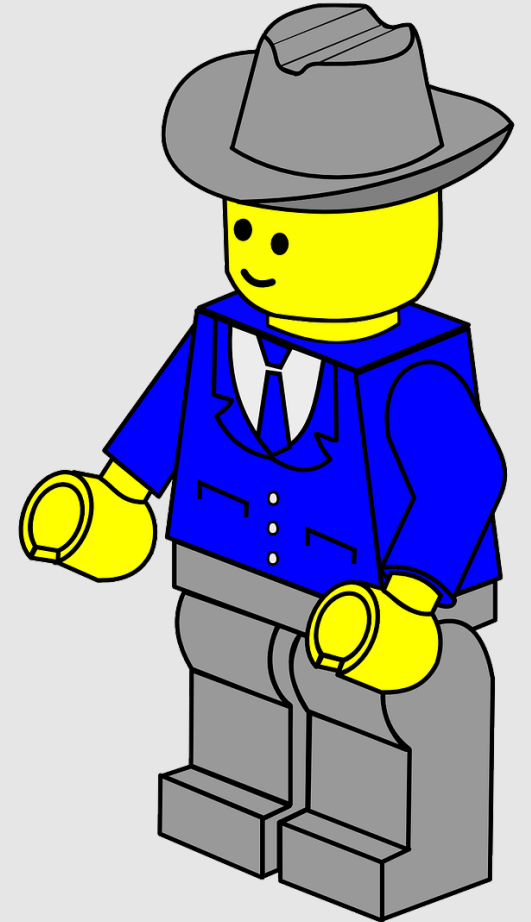
1. Literacy Learning Cycle:  
Trash Soup



Suppose a child was on a ship off the coast of Georgia and accidentally dropped a Lego man into the ocean.

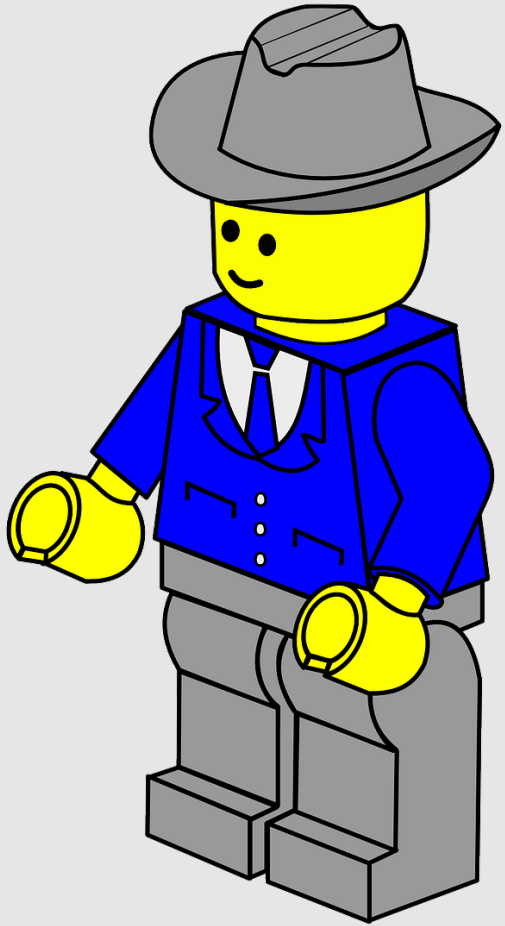
Where would Lego man go?  
What would determine his movement?

Let's do some activities to try to figure it out!





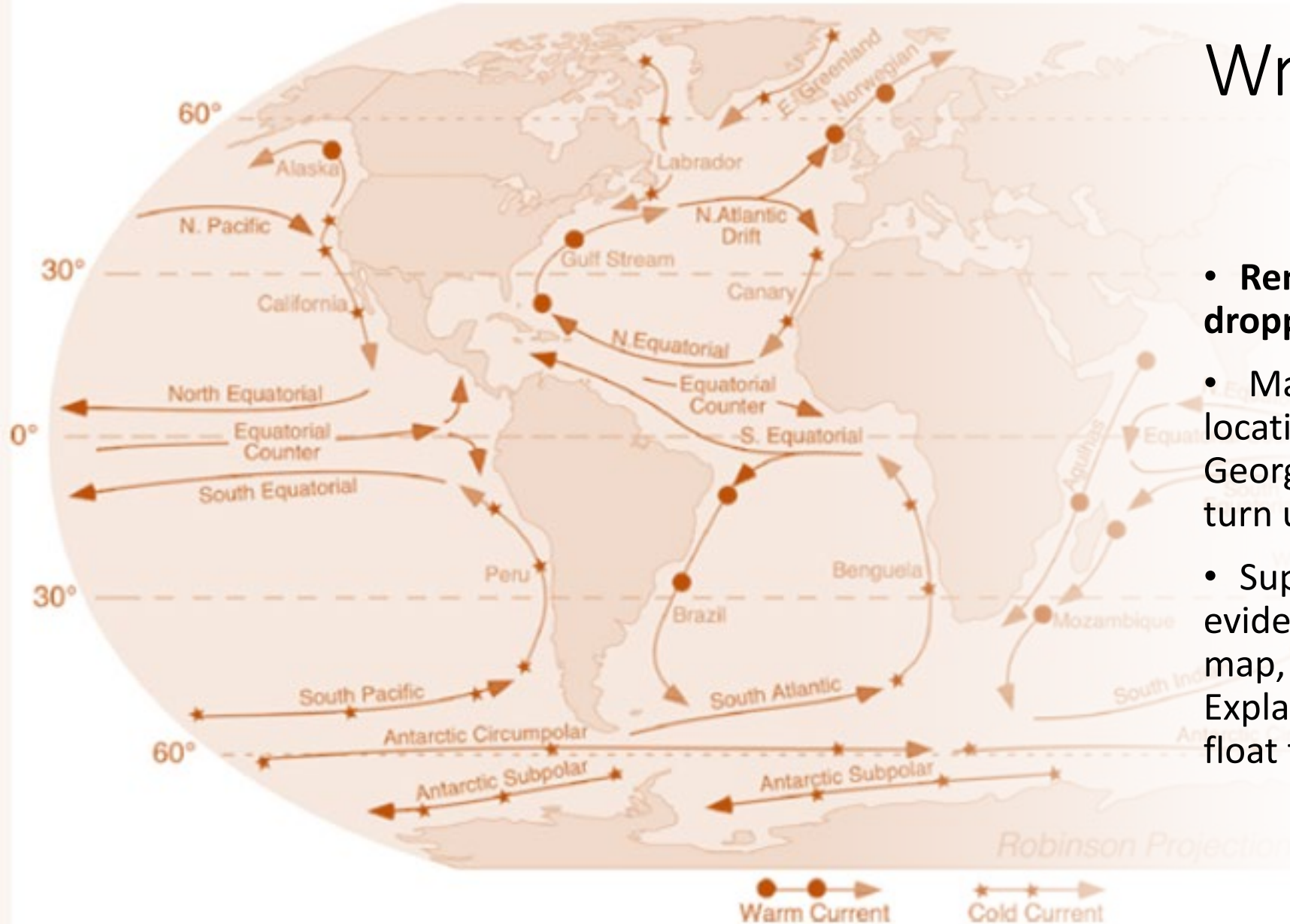
## Reading Prompts:



For Students: As you read, think about Lego man. What would affect his movement around the ocean?

For You: As you read, think about whether or not you are understanding what you read. How do you know if you understand? What do you do if you hit a spot you don't get?

# Major Ocean Surface Currents



## Writing Task

- Remember that toy man, dropped off the coast of Georgia? • Make a claim: What are two locations—other than the coast of Georgia—where you expect him to turn up? • Support your claim with evidence from your ocean currents map, your reading, and your lab. Explain how and why he might float to those places.

# Prewriting Questions

- Science ideas: What evidence will you want to use from your lab? What reasons will you want to use from the article?
- Science words: What science vocabulary will you want to use?
- What writing words might you use? (*cause and effect words, such as **because, due to, since, as a result, and therefore** might be good choices for this assignment*)



Handouts for  
Lab and  
Reading  
Available Here:

<https://wheelertoppen.files.wordpress.com/2023/03/ocean-in-motion-and-trash-soup.pdf>





Science

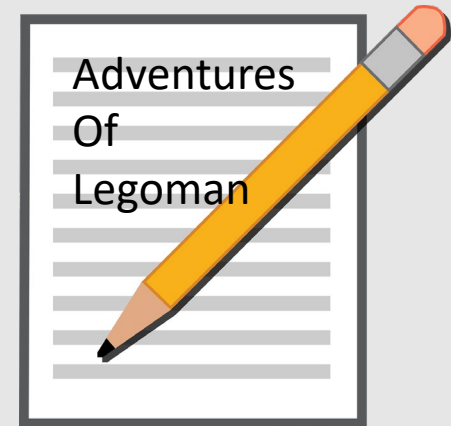
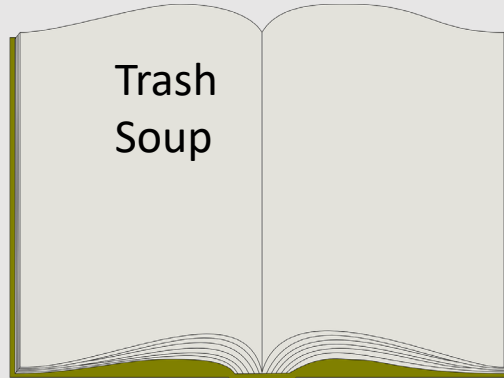
Reading

Writing

## 2. Literacy Learning Cycles

How this type of lesson is structured (and why!)

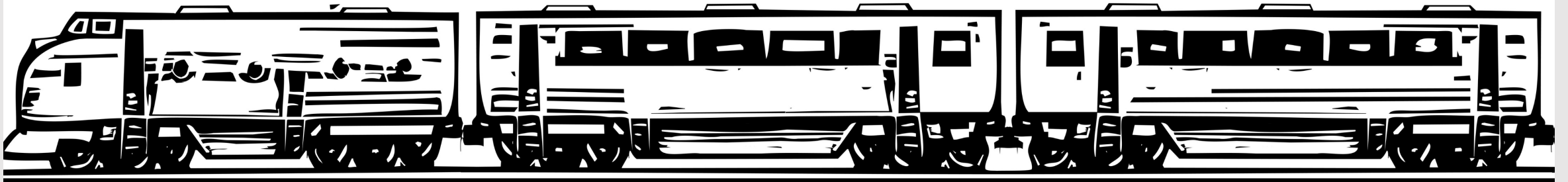
# Lesson Structure



Real Science

Analytical Reading

Academic Writing





**(Engage)**

**Exploration**

**Explanation**

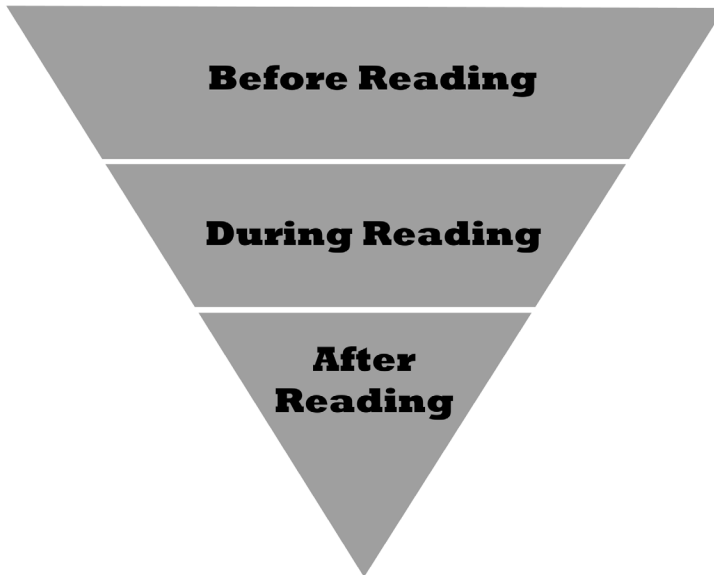
**Concept Application**

**(Evaluate)**

**+**

**+**

**+**



**=**

**=**

**=**

**Investigate the science concepts and build knowledge needed for the text**

**Read for clues to what they saw while exploring and for more information**

**Write to integrate ideas from observations and text**

**Science Learning Cycle**

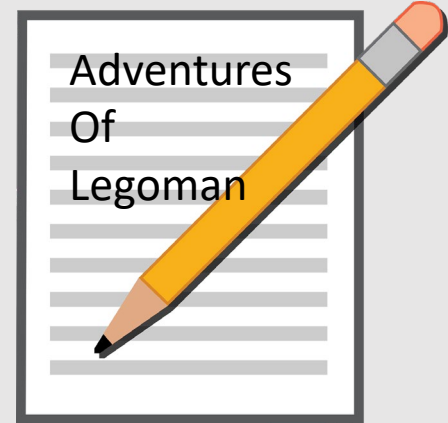
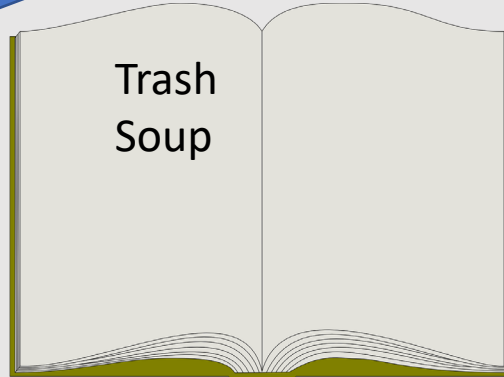
**Reading Lesson**  
(after Berkeley and Barber 2015)

**Literacy Learning Cycle**

More Complex  
Literacy Learning  
Cycle

Specific Reading  
Strategy

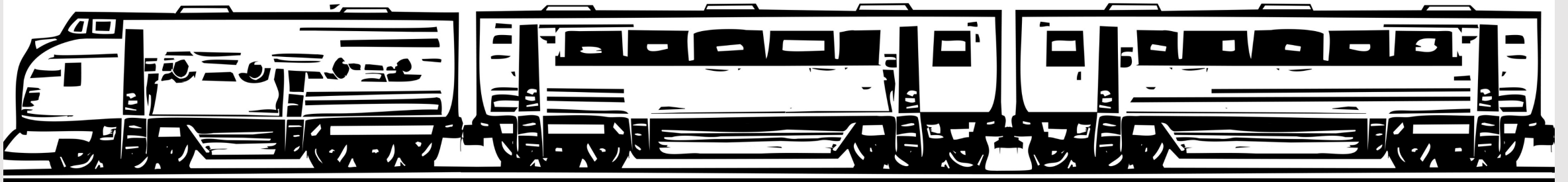
Specific Writing  
Strategy



Real Science

Analytical Reading

Academic Writing



Questions? Comments?



3. Digging Deeper  
on Reading:  
Three  
Impediments to  
Learning from  
Text


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How do you know if you understand what you are reading?

What do you do if you realize you don't understand?



The belief that reading is essentially a process of saying the words rather than actively constructing meaning from texts is widespread among many students. For instance, one of the students we interviewed looked surprised when he was asked to describe the topic discussed in a section of text he had just read.



***“I don’t know what it was about,”*** he answered, with no sense of irony, ***“I was busy reading. I wasn’t paying attention.”***

(Schoenbach, et al.; Reading for Understanding)



# 3 Impediments to Learning from Text

Impediment 1:  
Students do not expect what they are reading to make sense.

# Response: start a conversation

- Talk about needing to “figure out” as a normal part of reading science.
- Encourage students to pay attention to what they are thinking as they read.
- Model the kind of thinking that successful readers use through Thinking Aloud



# Thinking Aloud

---

The large surface currents in the ocean are caused by wind. In the polar regions at the top and bottom of the Earth, the air is cold. Molecules of cold air pack together and are dense. Near the equator, the Sun's heat warms the air. The molecules spread out and form a low-pressure zone. The polar air rushes toward the equator, where it warms and completes the loop.

## **Somerset Draw with Durham Hands Notts the Title**

After bowling the home side out for 320, Somerset were left needing 181 from 17 overs to guarantee the title. But, at 48-3, the chase was abandoned at Chester-le-Street and a draw agreed.

Fired-up Notts then took the three Lancashire wickets they required at Old Trafford to pick up a sixth bonus point and break Somerset hearts.

Eventually, Trego had Scott Rushworth caught behind and Benkenstein was caught at slip by skipper Marcus Trescothick off Charl Willoughby to set up the Somerset chase.

They went to the crease not knowing if a draw would be good enough to hold off Notts and immediately lost Kieswetter, promoted up the order, when he was bowled by Somerset old boy Blackwell.

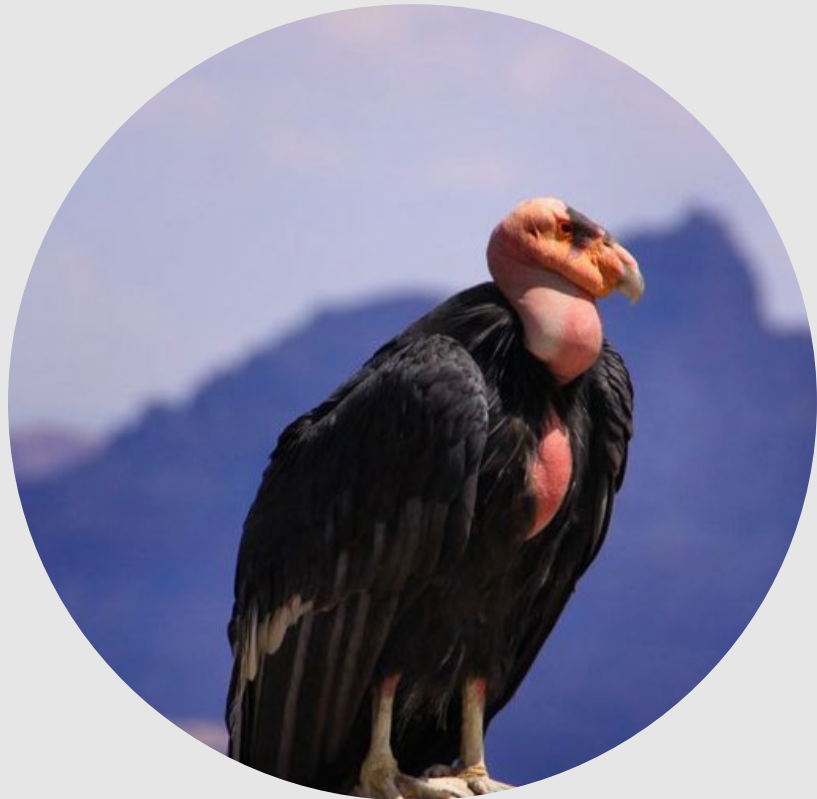


# 3 Impediments to Learning from Text

Impediment 2:  
Students lack background knowledge assumed by the text.

# Lack of Background Knowledge

“Some people were afraid the condor would soon be gone.”



# Background knowledge: non-science vocabulary

Adequate

Contradict

Tentative

Characteristic

Substance

Offspring

Deposit

Gradual

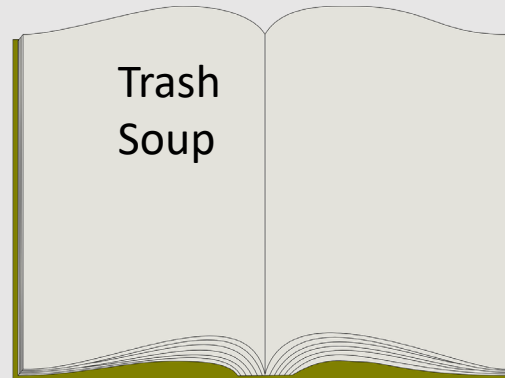
(All words used in academic writing, but  
not very often in speech)



# Responses:

- Have students explore before reading!
- Read the text, looking for background they'll need.
- Listen, listen to what they say about the text.
- Consider reading groups or having students think aloud to each other.

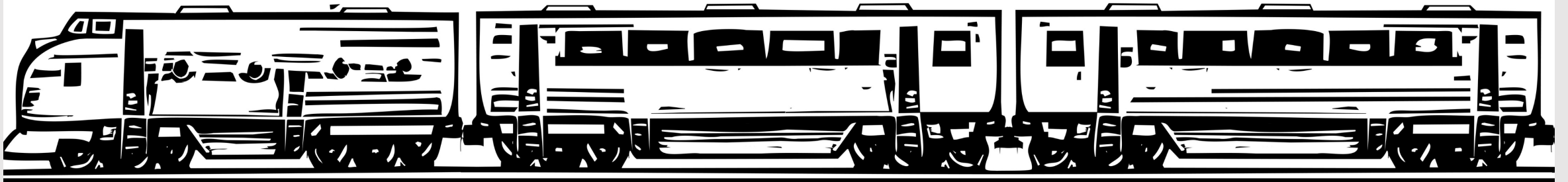
# Lesson Structure




Real Science

Analytical Reading

Academic Writing





Ferdie and Niddle gabbled on the plag,  
plag wert. “Pling,” Ferdie twaddled,  
“pling apie plee.” Niddle peedled and  
vang rue sot.

Comprehension Questions:

1. Where did Ferdie and Niddle gabble?
2. What did Ferdie twaddle?
3. What did Niddle do after he peedled?

\*Critical Thinking:

4. Where else might Ferdie and Niddle gabble?



# 3 Impediments to Learning from Text

Impediment 3:  
They don't  
have to read  
to do their  
school tasks.

# Response:

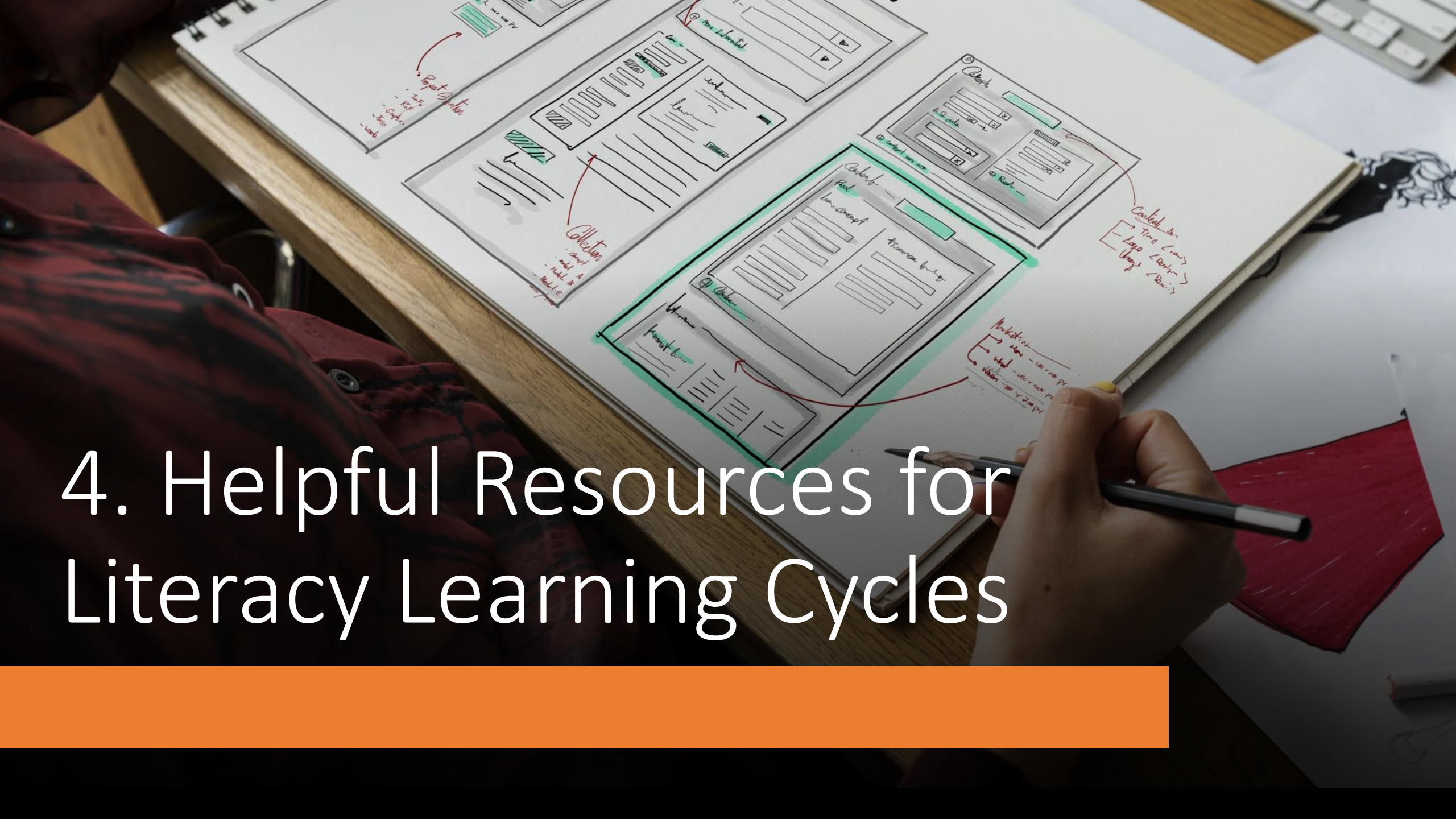
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- Give them better tasks!  
(That is, ask questions and give assignments that they cannot complete by just copying sentences.)



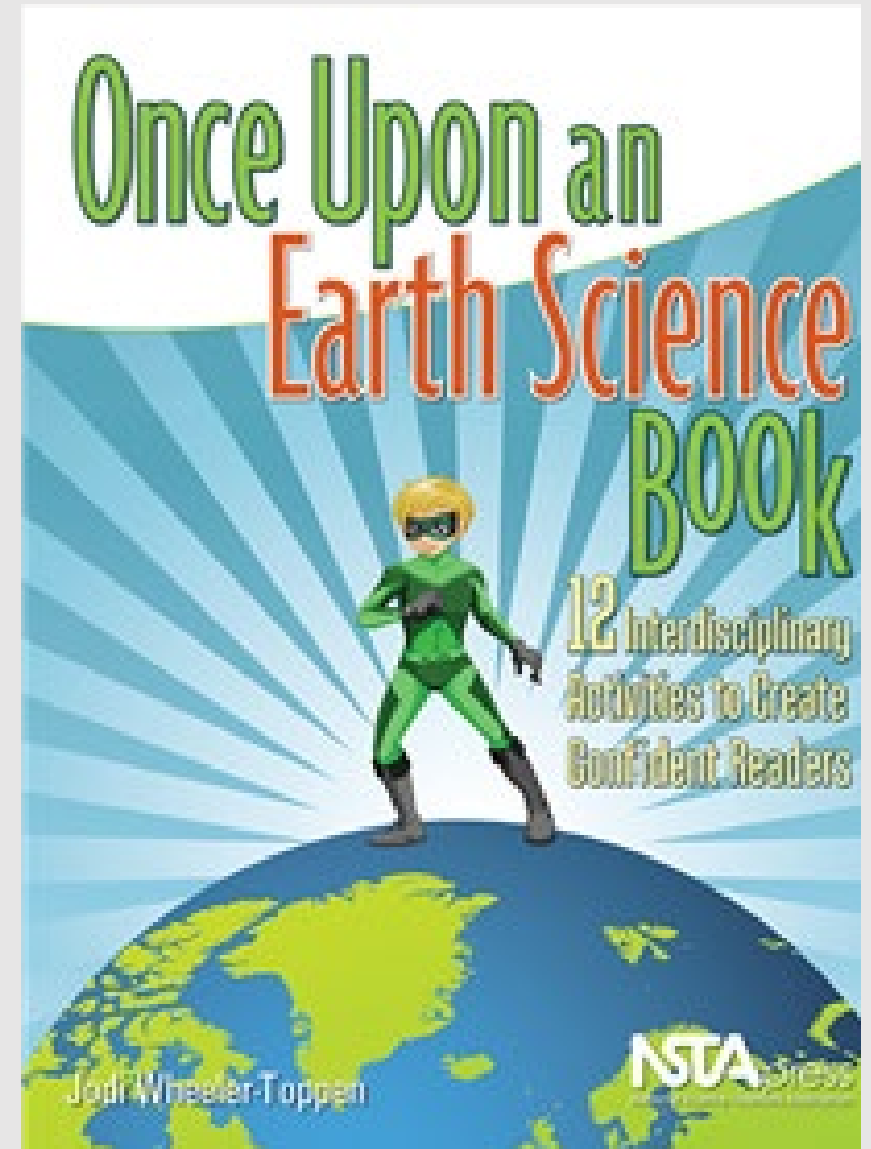
Questions? Comments?

# 4. Helpful Resources for Literacy Learning Cycles

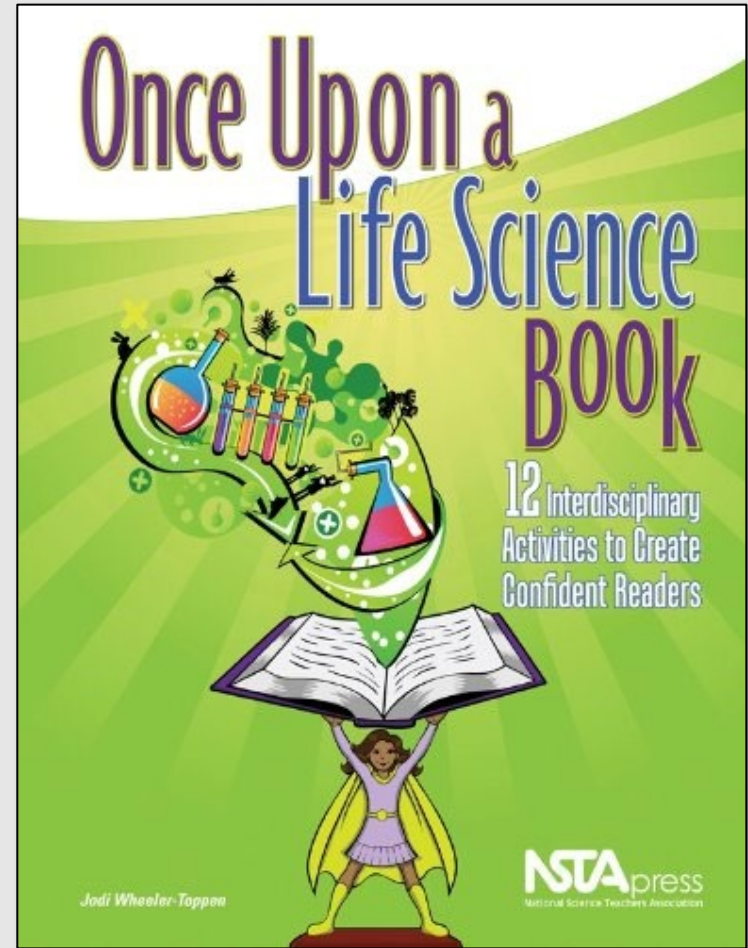
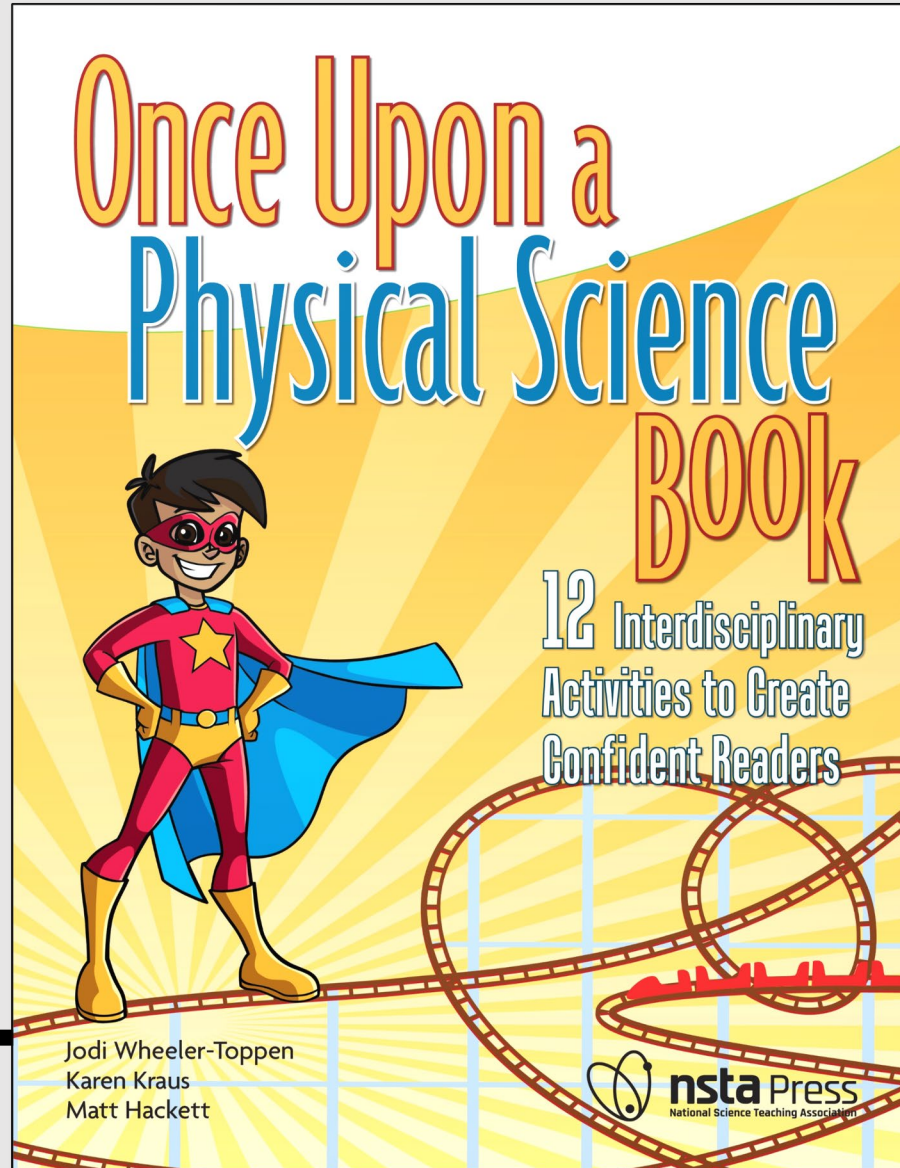
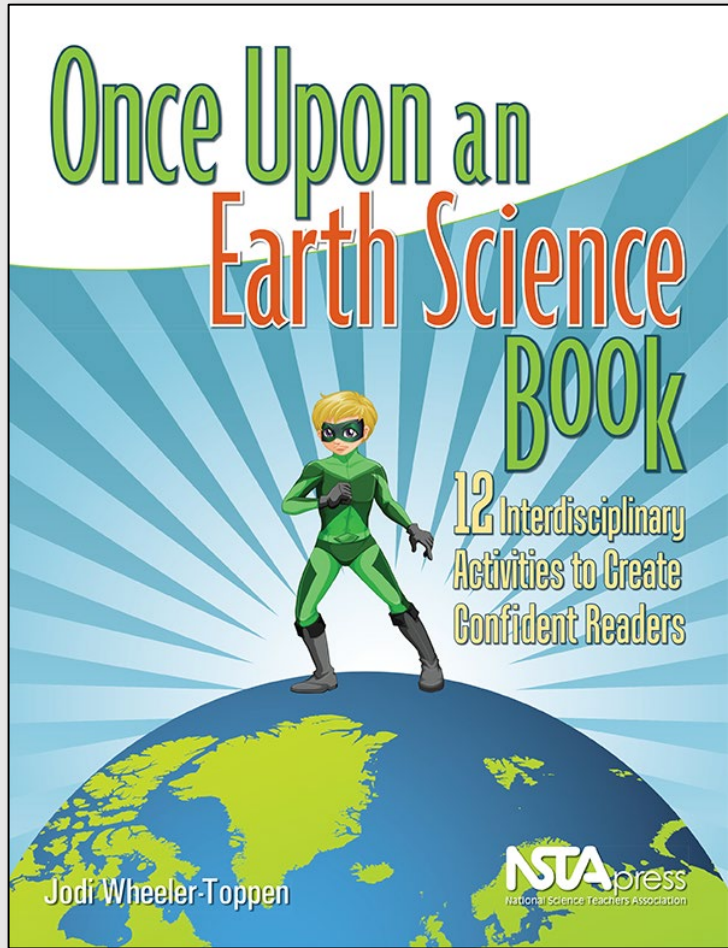


Each chapter includes:

- A hands-on exploration
- An engaging article to read, paired with
  - An appropriate reading strategy and instructions for introducing it
  - A short journal question about the strategy
- A writing prompt that draws from the exploration and the reading
- A “Thinking Visually” activity to reinforce ideas and build visual literacy







# Related Resources for the Books

- <https://onceuponasciencebook.com/for-educators/resources-for-teaching-online-with-the-once-upon-books/>
- <https://wheelertoppen.files.wordpress.com/2017/03/georgia-standards-of-excellence-correlations-life-science.pdf>
- <https://wheelertoppen.files.wordpress.com/2017/03/georgia-standards-of-excellence-correlations-earth-science.pdf>



# Georgia DOE Literacy Learning Cycles

- [Kindergarten Day and Night](#)
- [First Grade Light](#)
- [Second Grade Shadows](#)
- [Third Grade Fossils](#)
- [Fourth Grade Ecosystems](#)
- [Fifth Grade Erosion](#)
- [6<sup>th</sup> Grade Science Literacy Task: Tornadoes](#)
- [7<sup>th</sup> Grade Science Literacy Task: Cells](#)
- [8<sup>th</sup> Grade Science Literacy Task: Mixtures](#)

# Short Videos



## Elementary:

- [Integrating Writing and Science](#)
- [Integrating Reading and Science](#)
- [Writing about Claims, Evidence, and Reasoning](#)
- [Sentence Frames for Reading, Writing, and Forming Science Knowledge](#)

## Middle/High:

- [Integrating Writing and Science:](#)
- [Integrating Reading and Science:](#)
- [Signal Words for Reading, Writing, and Forming Science Knowledge](#)
- [Writing about Claims, Evidence, and Reasoning:](#)

## K-12:

- [Reading Strategies Part 1: Make it Make Sense: For Teachers in Grades K-12](#)
- [Reading Strategies Part 2: Problem-Solving Tools](#)
- [Knowing Enough to Read: How Background Influences Science Comprehension](#)
- [Before and After Writing: Prewriting and Evaluation](#)
- [Integrating Reading, Writing, and Science in the K-8 Classroom: A Call to Action for Administrators](#)

Questions? Comments?

Find Powerpoint here.  
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