



Read. Write. Science!

Literacy Strategies for Middle School Science

Jodi Wheeler-Toppen, Ph.D.

Agenda

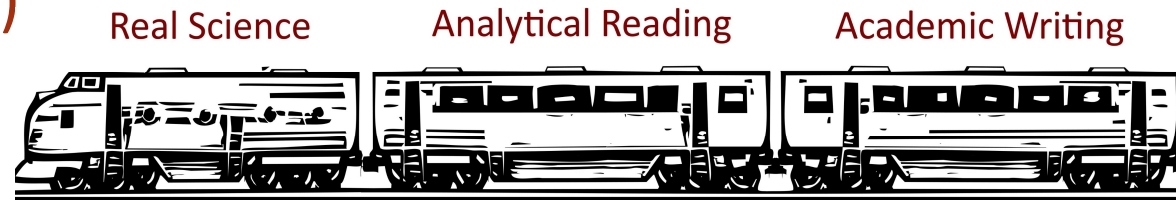
- ▶ Discuss results of two challenges plus a fabulous instant replay
- ▶ Claims and evidence
- ▶ What's next: deciding where to go from here as a team



Instant Replay!

▶ Share a recent win from your teaching. Don't be shy. Tell us something you felt really good about or are proud of.

Follow-up Challenge 1: Complete at least one lesson in the style of a literacy learning cycle (science activity, reading, writing)

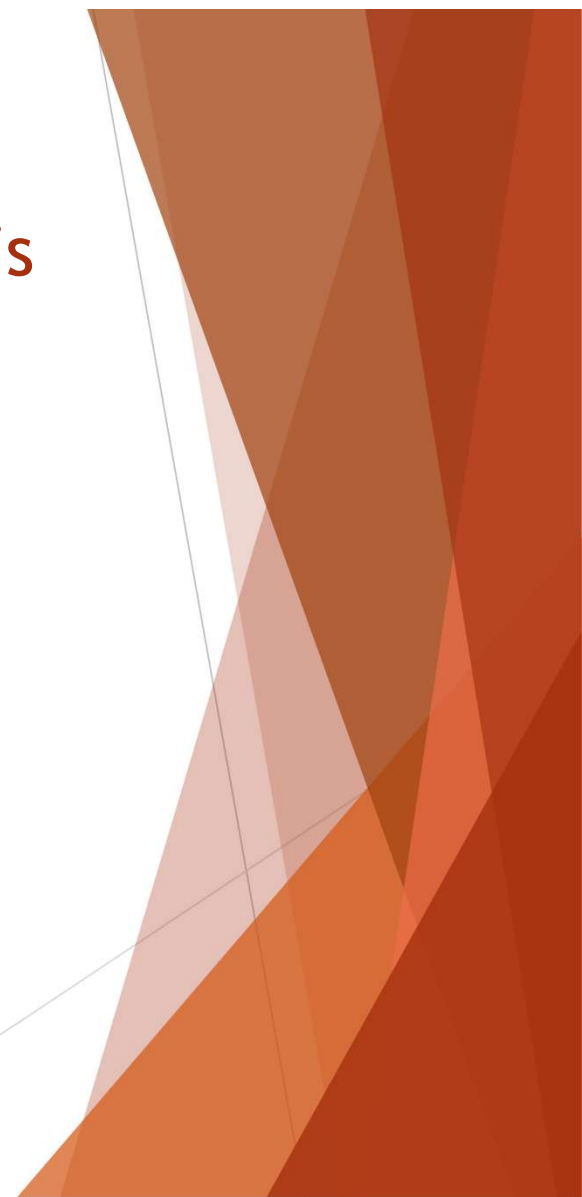


1. What was your (a) science activity, (b) reading, (c) writing? Were there other elements of the lesson you would like to tell us about?
2. What did you feel went successfully?
3. What challenges did you have?
4. How do you think students experienced the lesson?

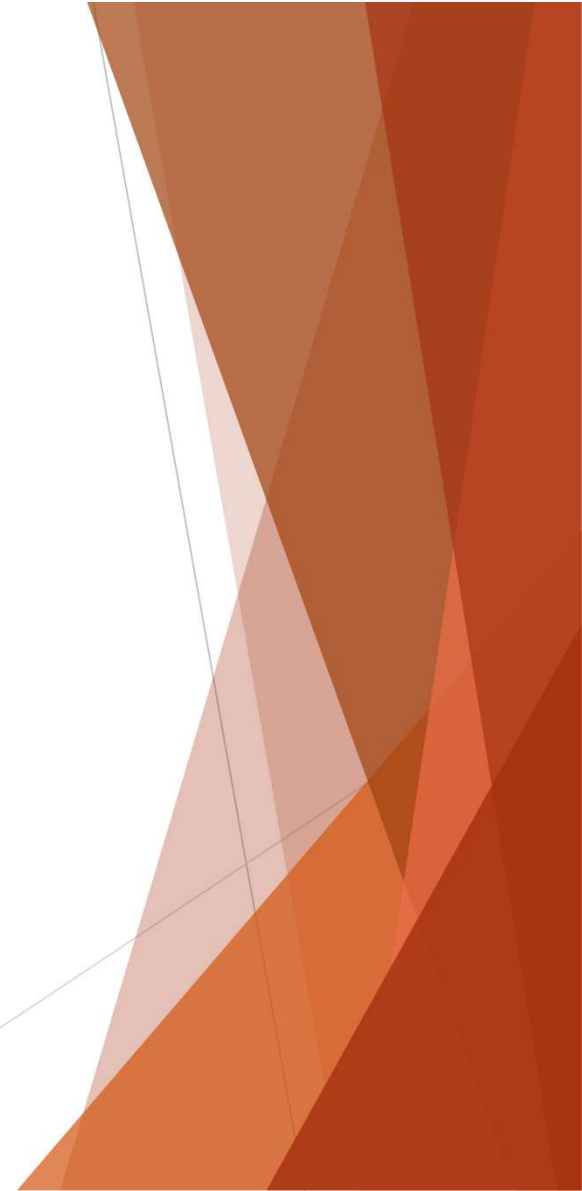
Follow up Challenge 2: Take a few minutes (short is fine, even 1-3 minutes) to "start the conversation" about reading with your students.

1. How did you incorporate talking about reading (as being a process) with your students?
2. Was it part of your literacy learning cycle, or at a different time?
3. What were student responses? How do you think they experienced what you were saying?

What other questions, comments, observations, or concerns do you have at this time about working with your students on reading and writing?



CER Writing



Issues?

- ▶ Reasoning
- ▶ Other things?
- ▶ Give some examples of CER questions students have struggled with.

Which car is fastest?

	Try 1 (s)	Try 2 (s)	Try 3 (s)	Average (s)
Car 1	7	9	8	8
Car 2	11	8	9	9.3
Car 3	5	6	7	6

Claim:

Evidence:

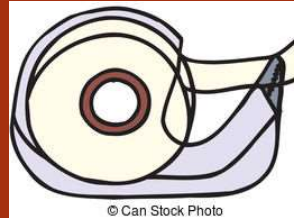
Reasoning:

Discuss

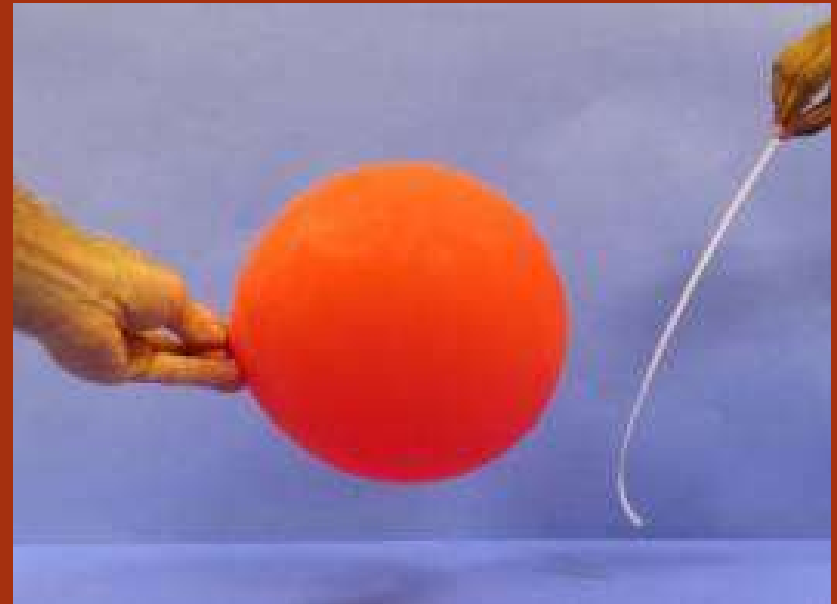
- ▶ Where did we struggle with this assignment?
- ▶ Where would our students struggle with this assignment?

What is the charge on our tape strip?

- Rubber balloons pick up electrons very easily (and thus become negative). Inflate a balloon and rub it on the carpet or in your hair.
- Make a fresh strip of “ripped-from-the-table” tape. **Use the balloon to figure out the charge on the tape.**
- **Does the tape have a positive charge or a negative charge?** Make a claim and support it with evidence and reasoning. **Include an explanation of what is happening in the atoms of the tape to create that charge!**



© Can Stock Photo



Discuss

- ▶ Where did we struggle with this assignment?
- ▶ Where would our students struggle with this assignment?

Claim-Evidence-Reasoning Framework

Claim:	
Scientific Principles:	
Evidence: (Data/Observations)	Reasoning: (How do the evidence and scientific principle(s) support the claim?) We know that... We saw that... Therefore,

Claim-Evidence-Reasoning Framework

- ▶ Let's try this with the tape charge example.

Claim: The tape has a positive charge.

Scientific Principles:

Balloons pick up electrons easily.
Electrons make them negative.
Opposite charges attract.

**Evidence:
(Data/Observations)**

The tape was attracted to the balloon

Reasoning: (How do the evidence and scientific principle(s) support the claim?)

We know that... balloons pick up electrons and get a negative charge, and opposite charges attract.

We saw that... the tape was attracted to the balloon.

Therefore, the tape must have an opposite (positive) charge.

Which drink is a better source of energy?



Drink A



Drink B

Yeast use sugars for energy and release carbon dioxide gas. The more energy they can get from a source, the more gas is released.

Which Drink Is a Better Source of Energy?

Claim:

Scientific Principles:

**Evidence:
(Data/Observations)**

Reasoning: (How do the evidence and scientific principle(s) support the claim?)

We know that...

We saw that...

Therefore,

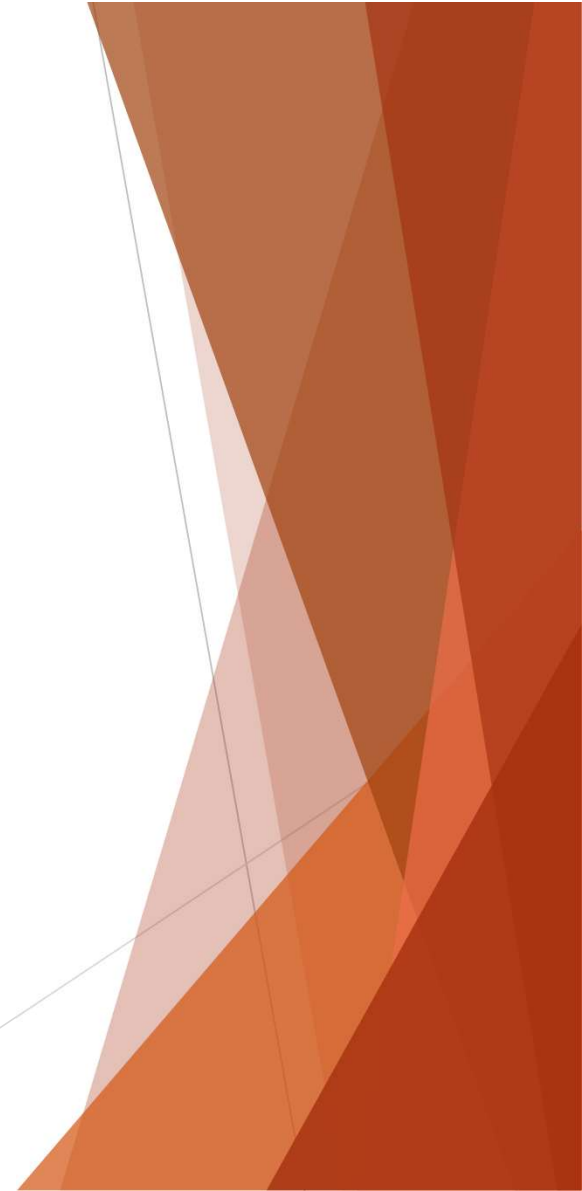
More sophisticated argumentation:

- ▶ Counter-claims and rebuttals (competing claims)
 - ▶ If _____ (were true), then _____ would have _____. Instead, we saw _____. Therefore, _____.
- ▶ Weighing the strength of evidence
- ▶ Weighing the sufficiency of evidence
- ▶ Evaluating evidence from text (rather than a lab activity)
- ▶ Presenting arguments convincingly (writing clearly, writing for your audience, etc.)
- ▶ I recommend this as a resource for more ideas on these tasks:

<https://argumentationtoolkit.lawrencehallofscience.org/argument-elements/competing-claims/>

Where do you (and your team) want to go from here?

- ▶ Take a moment to jot down the ideas that you want to try/follow-up on in your own classroom.



Options to Consider as a Group:

- ▶ Pick a second “teaching challenge” (such as trying again with a literacy learning cycle or doing a CER lesson) and meet back to discuss how it went.
- ▶ Do a book or material study together.
 - ▶ Argument Driven Inquiry (<https://www.nsta.org/argument-driven-inquiry-series>)
 - ▶ Each pick a book related to your material and study opening chapters together and try lessons.
 - ▶ Argumentation Toolkit (<https://argumentationtoolkit.lawrencehallofscience.org/>)
 - ▶ Take turns preparing one of the PD sessions outlined on the site.
 - ▶ Read and discuss the “Reading strategies” chapter in the *Once Upon* books, or use my videos (next slide) to get ideas on specific strategies.
- ▶ Pick a lesson type and do peer observations.
- ▶ Learn how to conduct reading groups or other talk-based reasoning groups.

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](#)



Find Powerpoint here.
Also, sign up for
newsletter!



OnceUponAScienceBook.com



wheelertop@gmail.com



WheelerToppen



@JodiWheelerToppen

Connect with Me