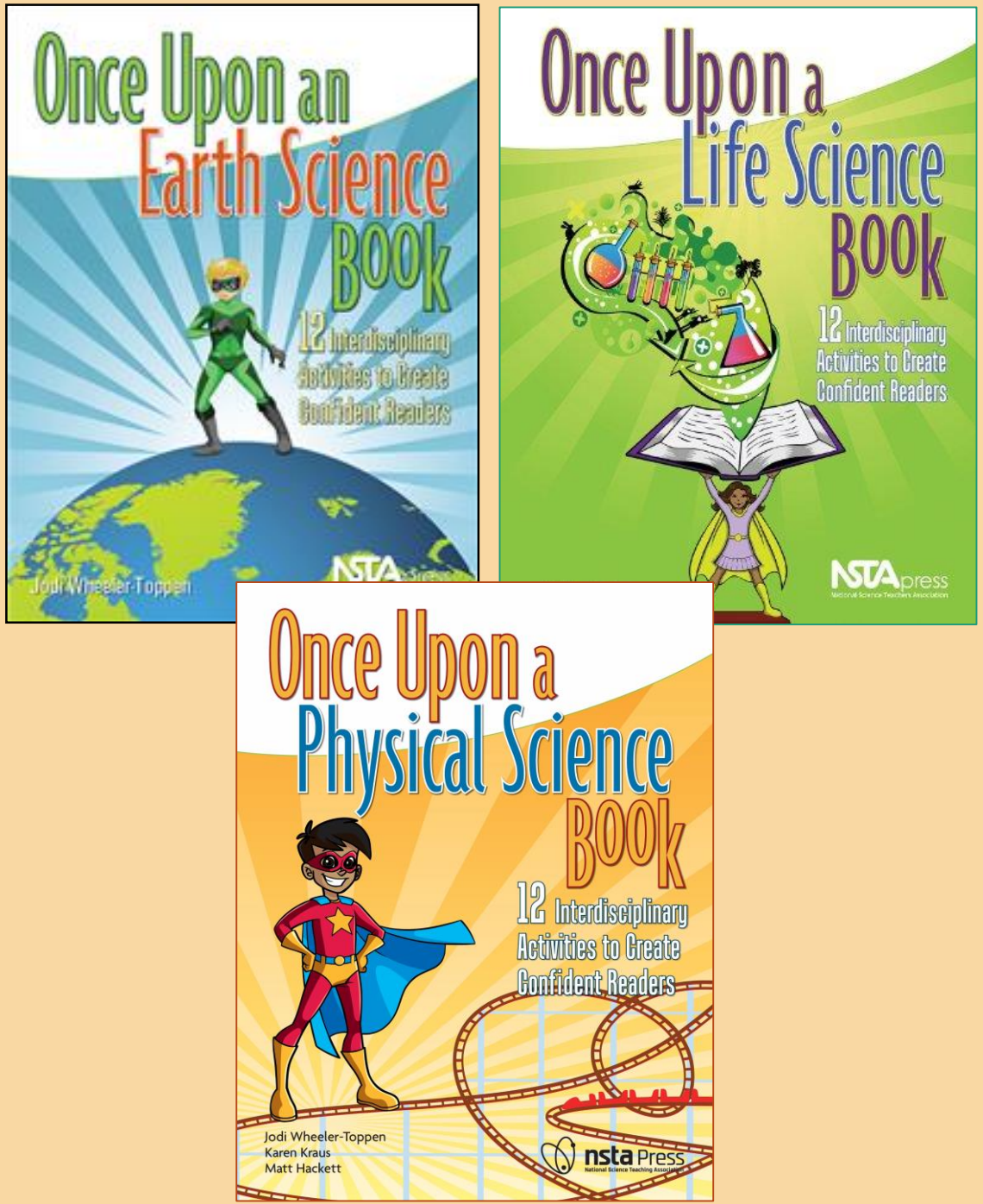
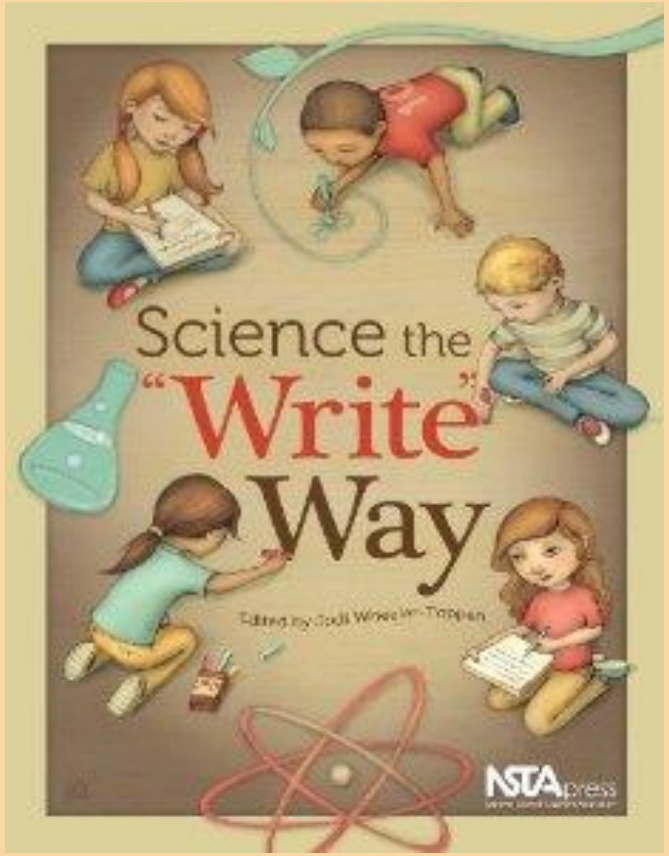
Jodi Wheeler-Toppen, Ph.D.
wheelertop@gmail.com

More Reading, Writing, and Science

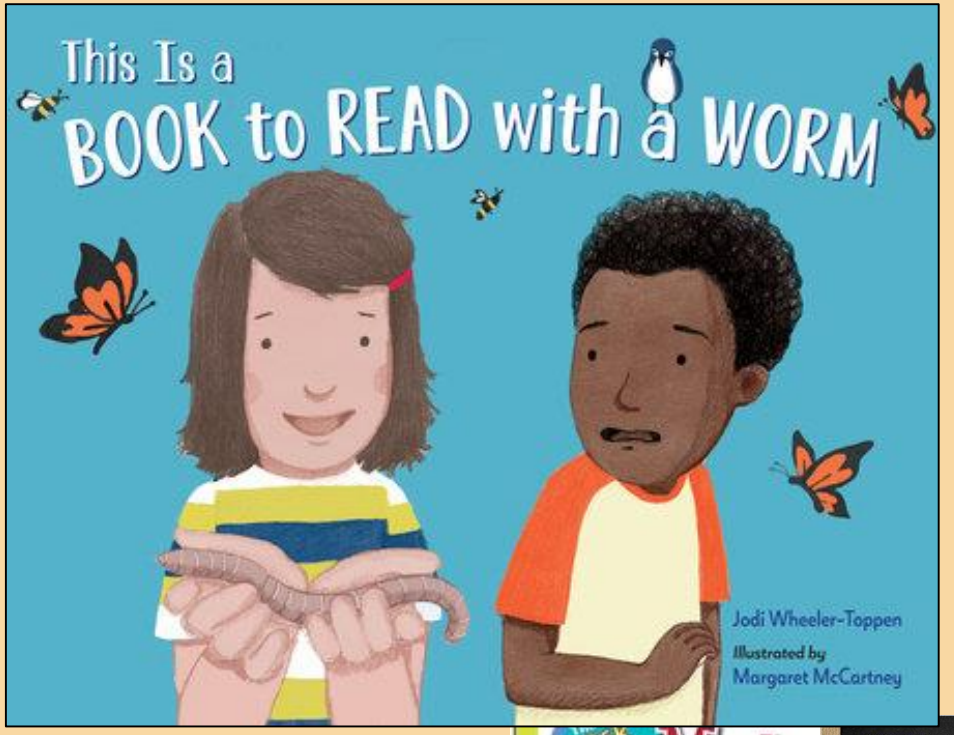


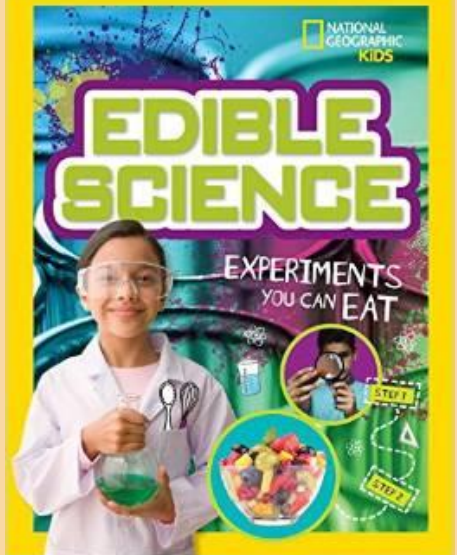
Who I Am
and
How I
Ended Up
Here

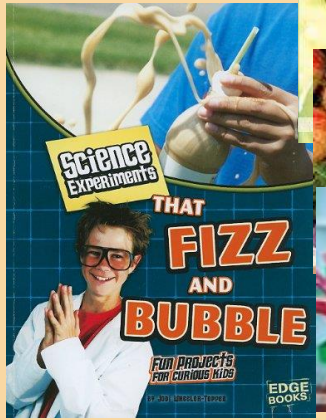



NATIONAL GEOGRAPHIC KIDS
DOG SCIENCE UNLEASHED
FUN ACTIVITIES TO DO WITH YOUR CANINE COMPANION
JODI WHEELER-TOPPEN


NATIONAL GEOGRAPHIC KIDS
HANDS-ON SCIENCE
CAT SCIENCE UNLEASHED
FUN ACTIVITIES TO DO WITH YOUR FELINE FRIEND
JODI WHEELER-TOPPEN
PHOTOGRAPHS BY MATTHEW RAKOLA

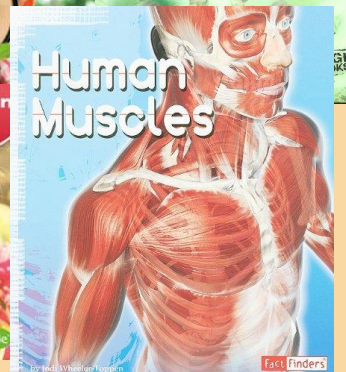

This Is a
BOOK to READ with a WORM
Jodi Wheeler-Toppen
Illustrated by
Margaret McCartney


NATIONAL GEOGRAPHIC KIDS
EDIBLE SCIENCE
EXPERIMENTS YOU CAN EAT

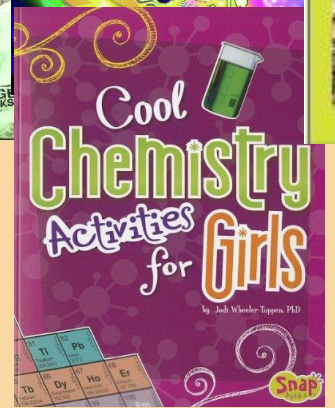

Science Experiments
THAT FIZZ AND BUBBLE
FUN PROJECTS FOR CURIOUS KIDS
EDGE BOOKS

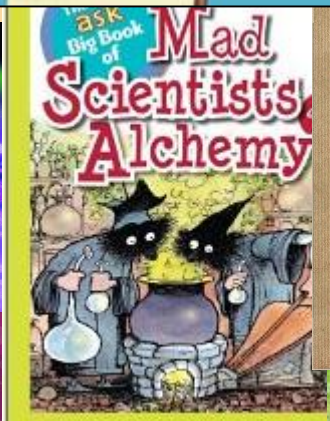

Our Ears Can Hear
Our Eyes Can See
Our Mouths Can Taste
Our Noses Can Smell
Our Skin Can Touch
Little Pebble

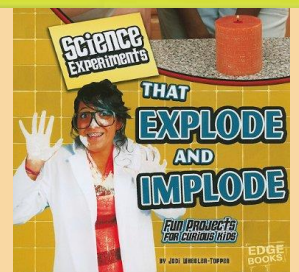

GROSS SCIENCE PROJECTS

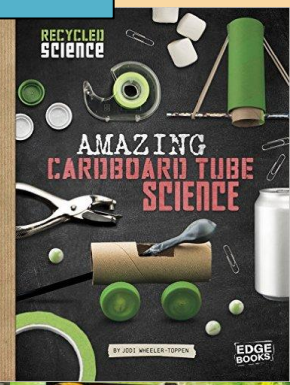

Human Muscles
Fact Finders

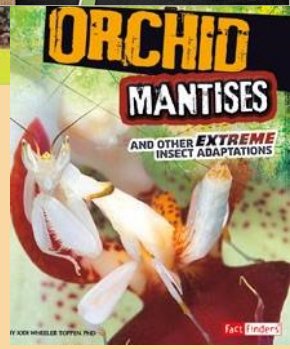

GHOSTS AND ATOMS


Cool Chemistry Activities for Girls
Snap


Mad Scientists Alchemy


Science Experiments
THAT EXPLODE AND IMPLODE
FUN PROJECTS FOR CURIOUS KIDS
EDGE BOOKS


RECYCLED SCIENCE
AMAZING CARDBOARD TUBE SCIENCE
EDGE BOOKS


ORCHID MANTISES
AND OTHER EXTREME INSECT ADAPTATIONS
Fact Finders

Session Plan…

- Let’s spend a few minutes finding out what experiences you have had with using science as part of your literacy work and see what questions you have.
- See what we can do to address those questions and needs, and if we have time,
- Dig into some specific practices that can help students think more deeply about science texts.

Who came to my online session in July?

Have you tried to use any “train style” lessons this fall?

What successes and challenges did you experience as you did so?

EXPLORE **EXPLAIN** **EXTEND**

What other literacy and science challenges have come up in your classroom this year?

Supporting Students as Science Readers

Everything we are going to talk about assumes you started with exploring the science.

- To provide background knowledge
- To create interest
- To give a reason to read

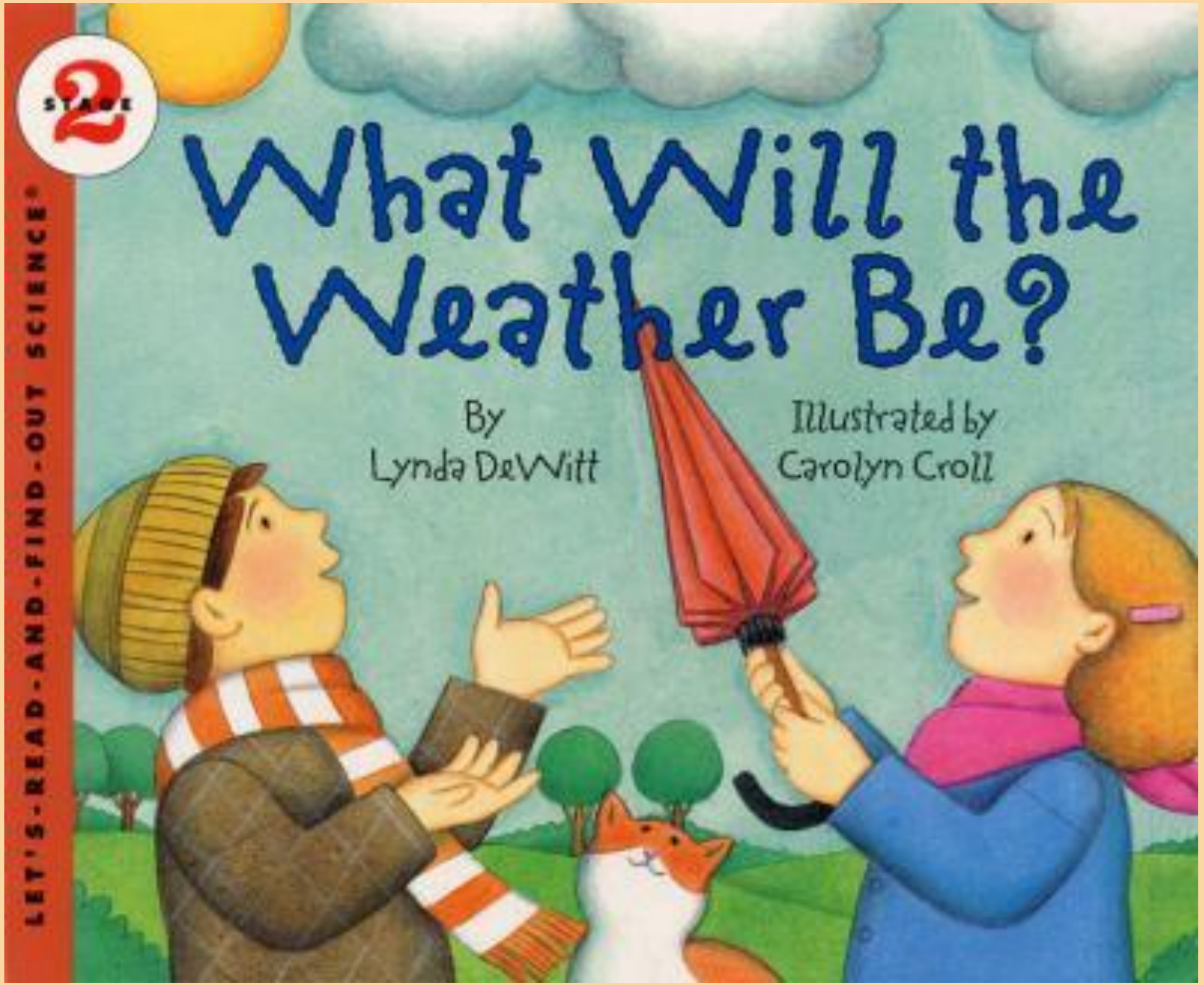
S4E4. Obtain, evaluate, and communicate information to predict weather events and infer weather patterns using weather charts/maps and collected weather data.

a. Construct an explanation of how weather instruments (thermometer, rain gauge, barometer, wind vane, and anemometer) are used in gathering weather data and making forecasts.

b. Interpret data from weather maps, including fronts (warm, cold, and stationary), temperature, pressure, and precipitation to make an informed prediction about tomorrow's weather.

Resources for exploring the science:

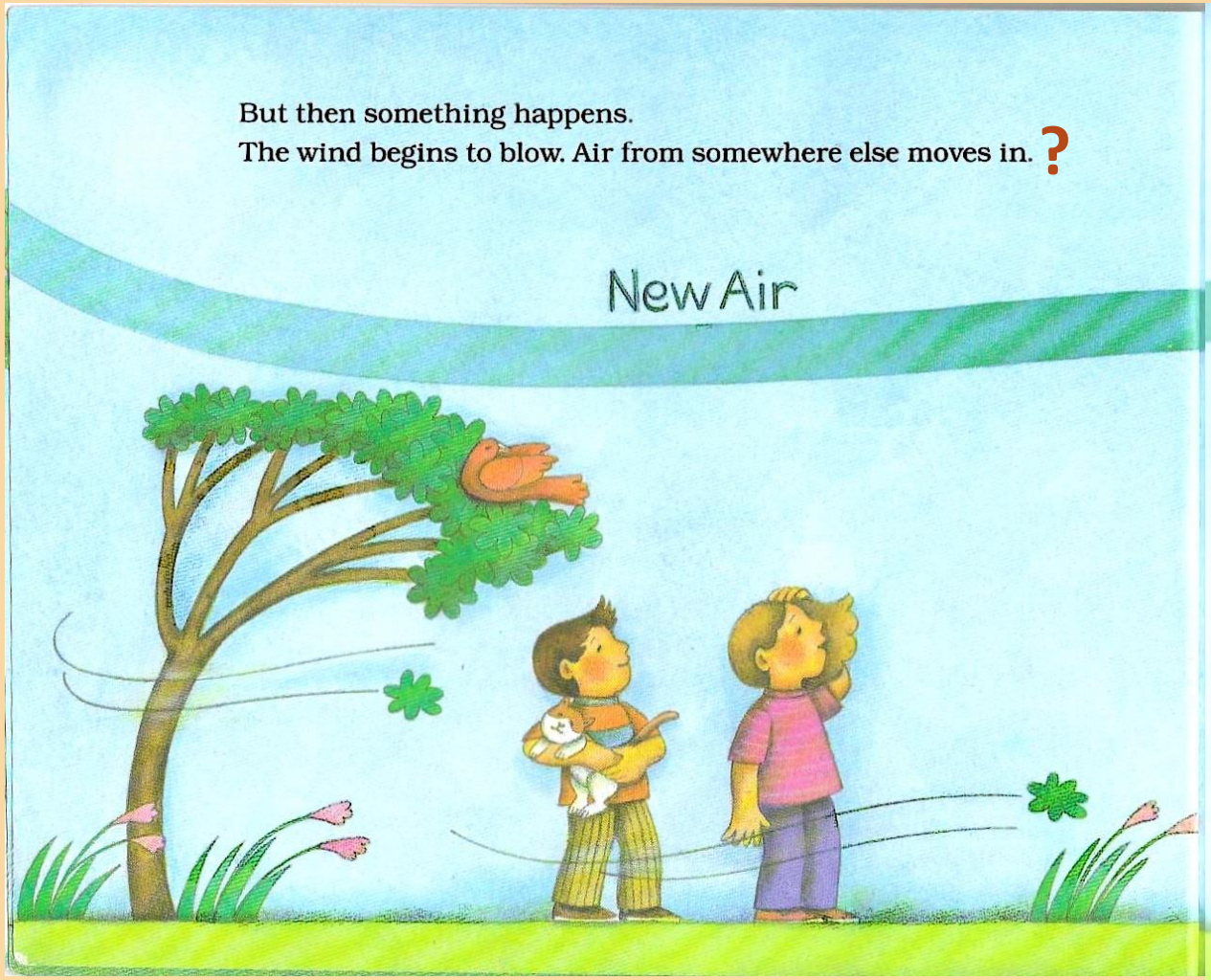
Georgia DOE Unit Plan for Weather Data
Georgia DOE Weather Plan for Distance Learning
Even More Picture Perfect Science Books, Chapter 18: What will the weather be?

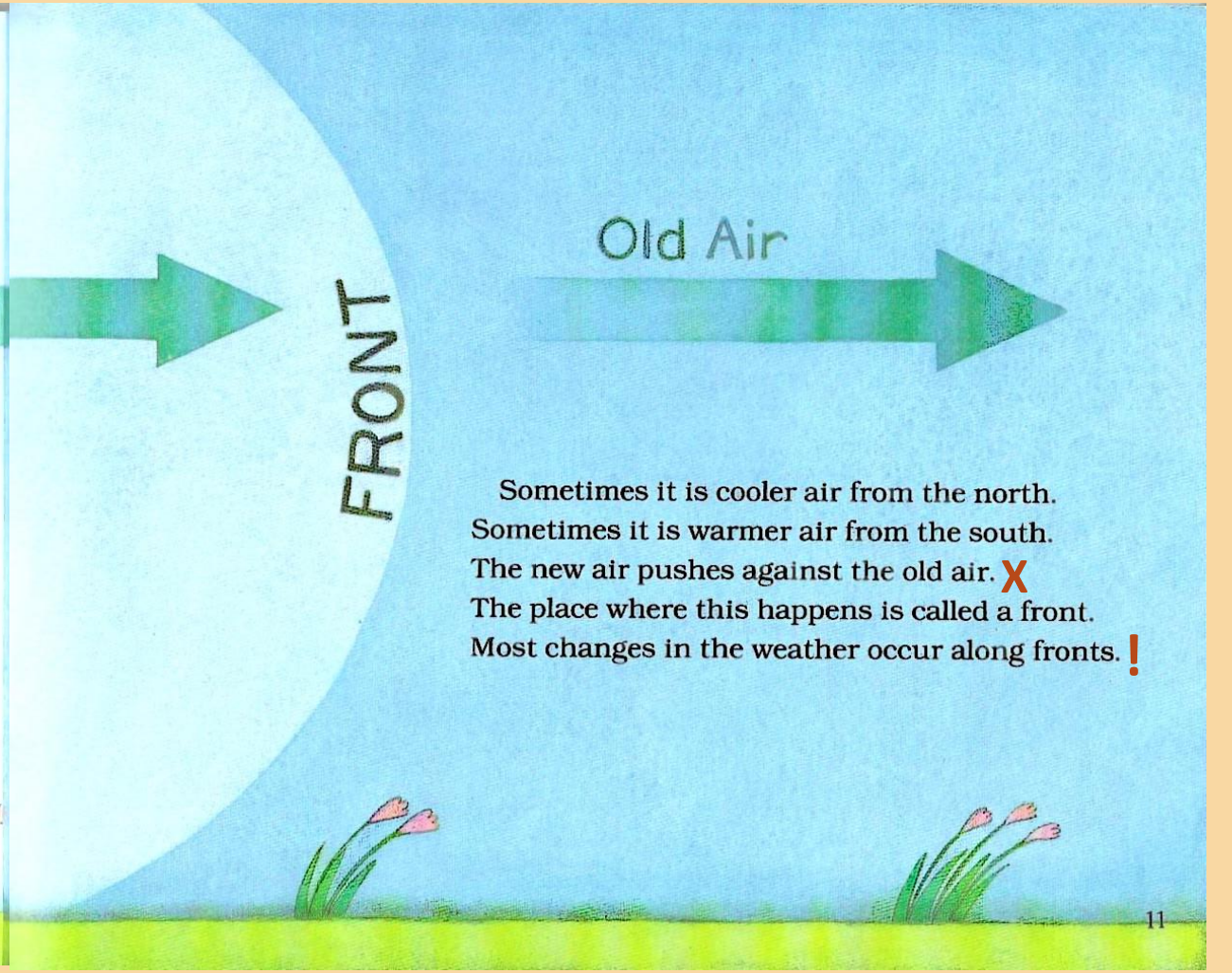


https://amzn.to/3pLTI7D

Coding

! This is important.
? I have a question.
X This is different from what I thought.
✓ I knew that.



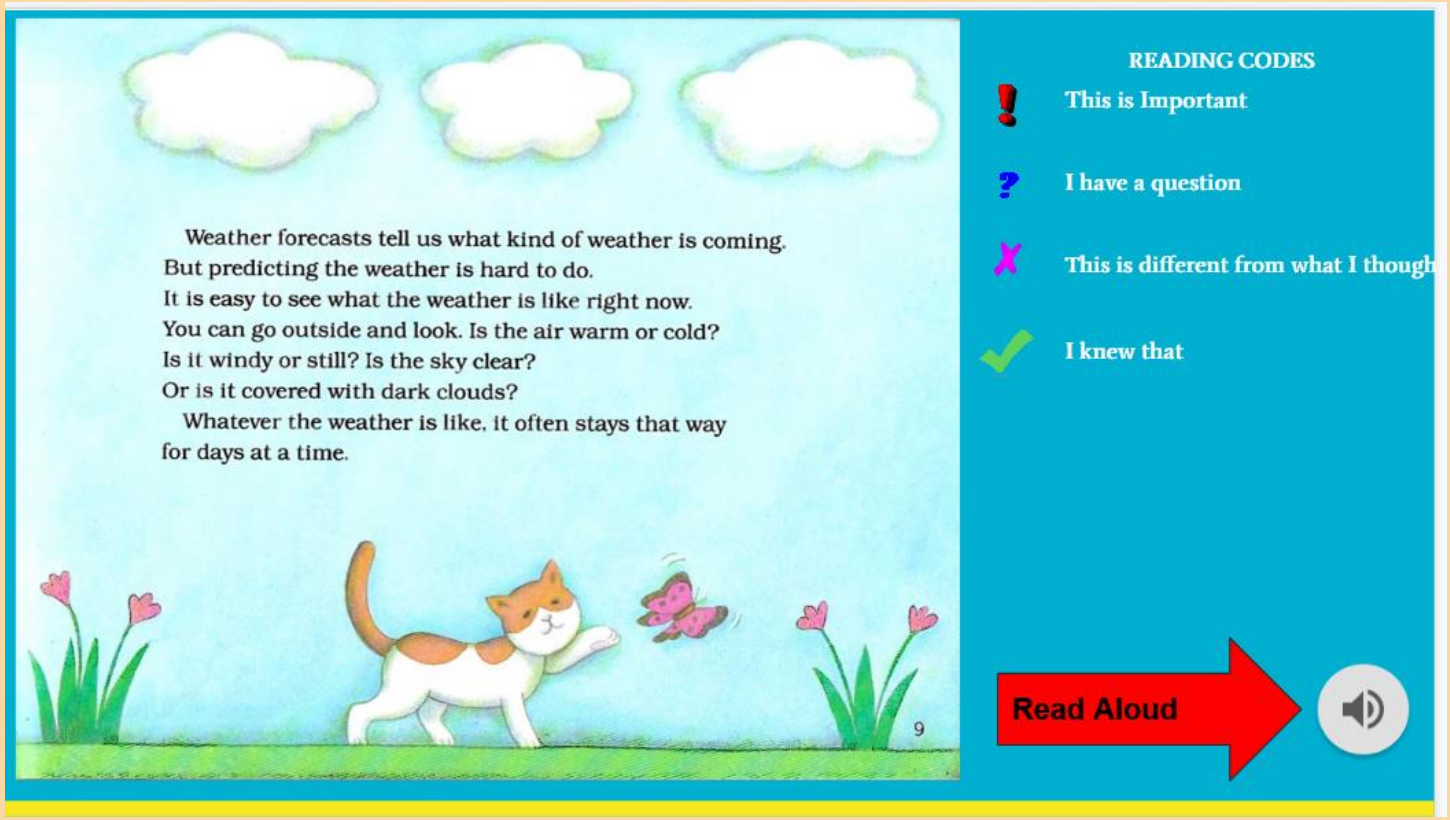


System for Reading with Distance Learning

With many thanks to Molly Niese!

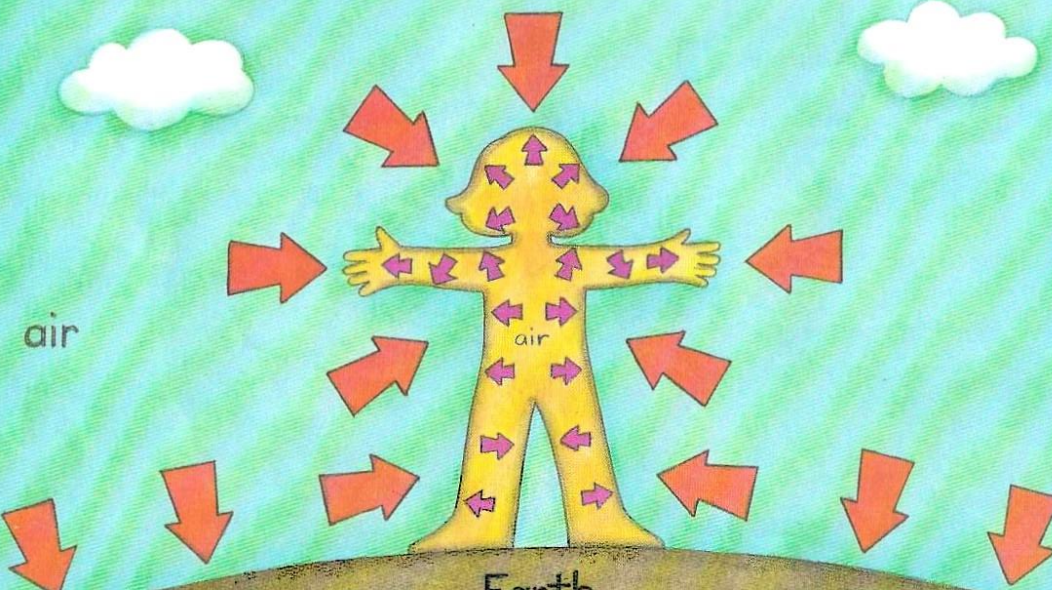
https://docs.google.com/presentation/d/1ei7aEc-FOyd4kGXM4QdHYsdWlUcxpiF91SLshlotDPE/edit?usp=sharing

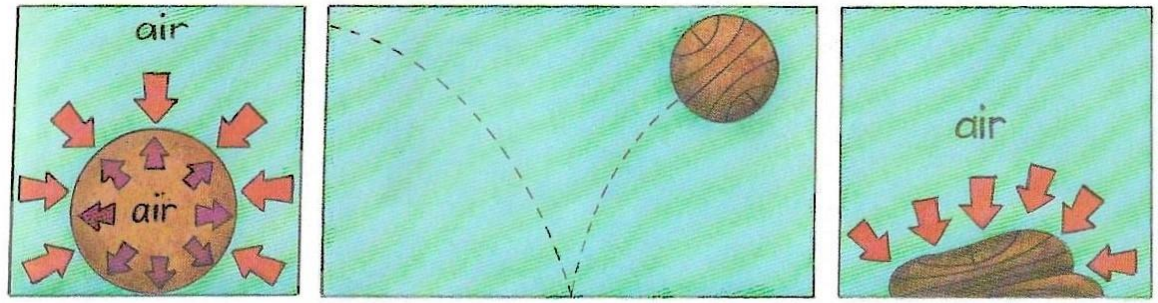
https://docs.google.com/presentation/d/1ei7aEc-FOyd4kGXM4QdHYsdWlUcxpiF91SLshlotDPE/copy



Talk Your Way Through It (Pause, Retell, Compare)

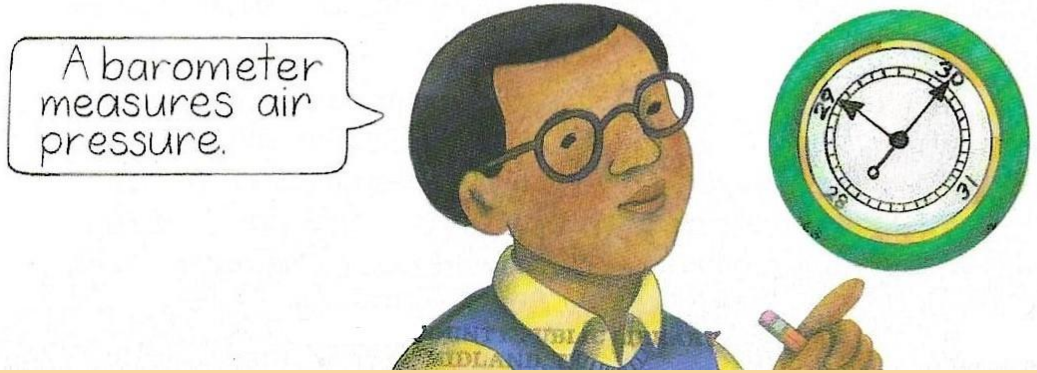
Another thing meteorologists measure is air pressure. It's hard to imagine, but air has weight. And all of this weight presses on the earth. It presses on everything—even you! Hundreds of pounds of air press against your body all the time. You cannot feel it because air inside your body pushes out with the same force.



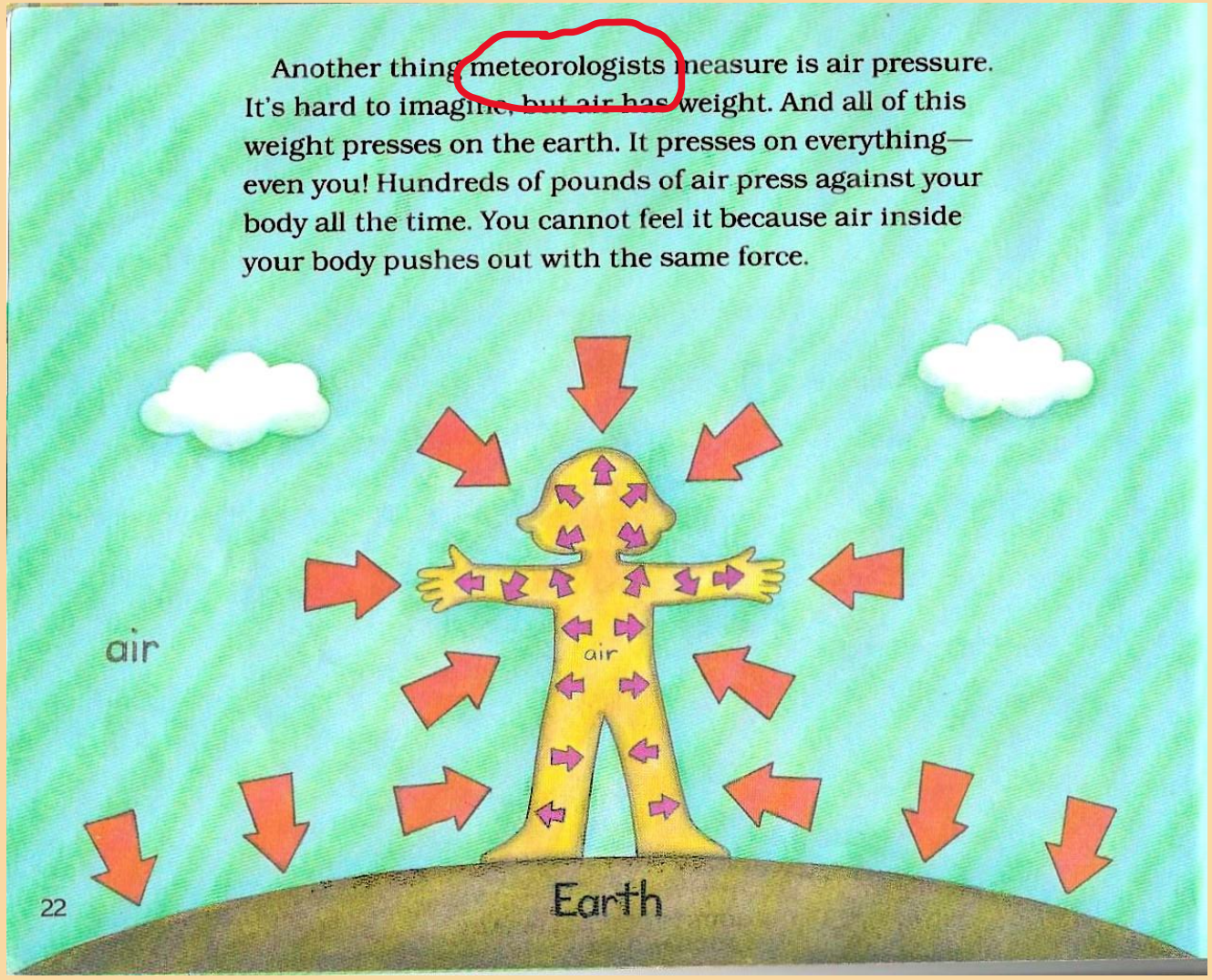


Air inside this basketball pushes out, too. You can bounce a ball when it has air in it. But what happens when you take the air out? The basketball flattens. It collapses from the weight of outside air.

You cannot feel air pressure, and you cannot tell when it changes. But it does. Sometimes it is high, and sometimes it is low. As the air pressure changes, the weather changes.



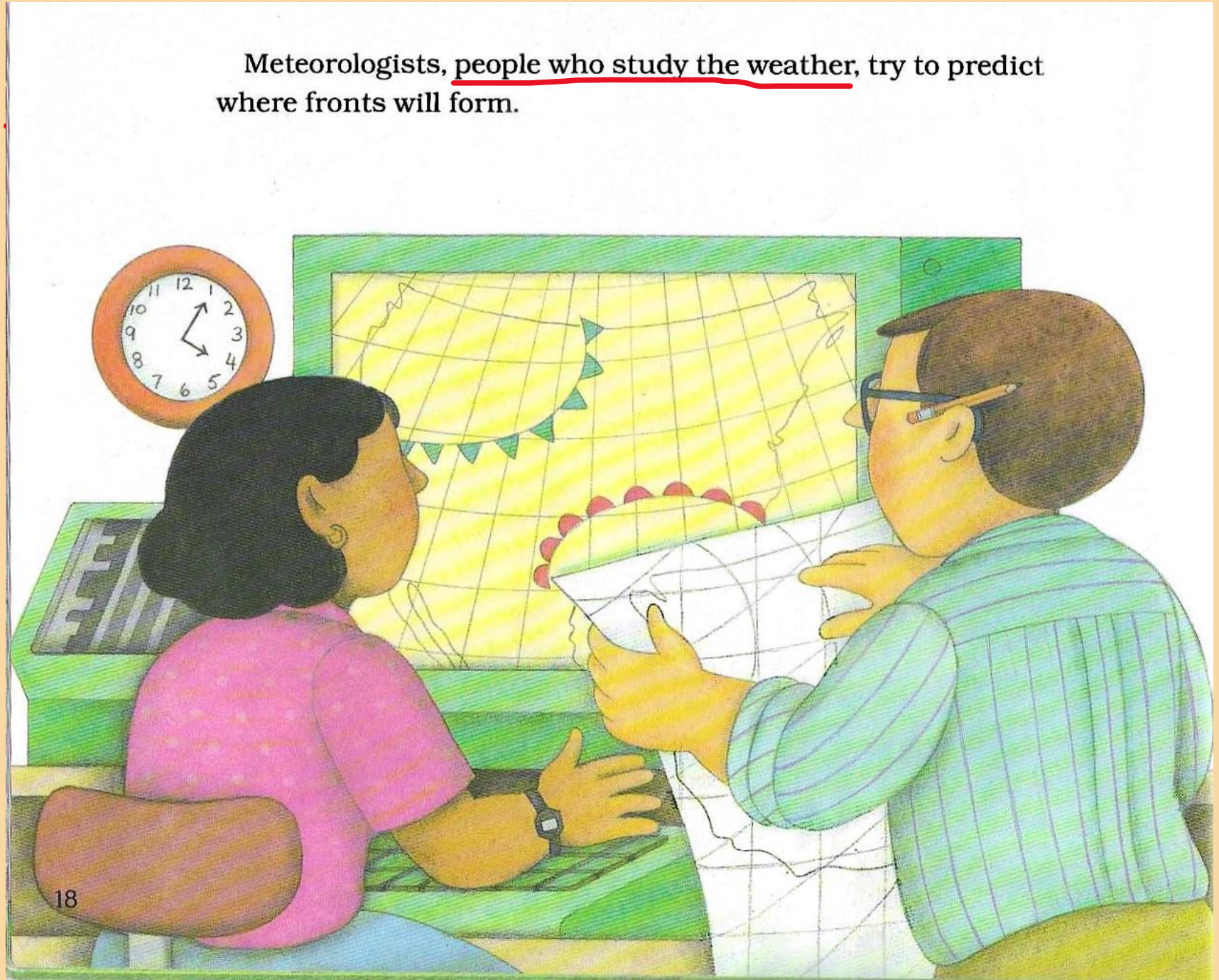
Finding the Meaning of New Words



New science words are usually defined just *before* or just *after* the **FIRST** time the word is used.

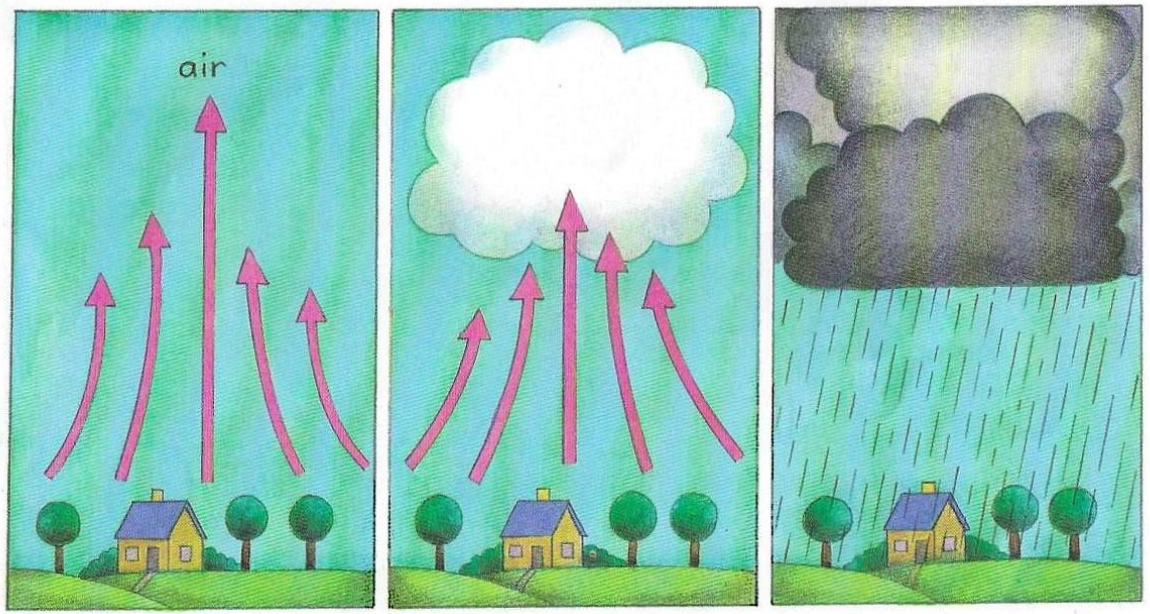
(flip, flip, flip)

Meteorologists, people who study the weather, try to predict where fronts will form.

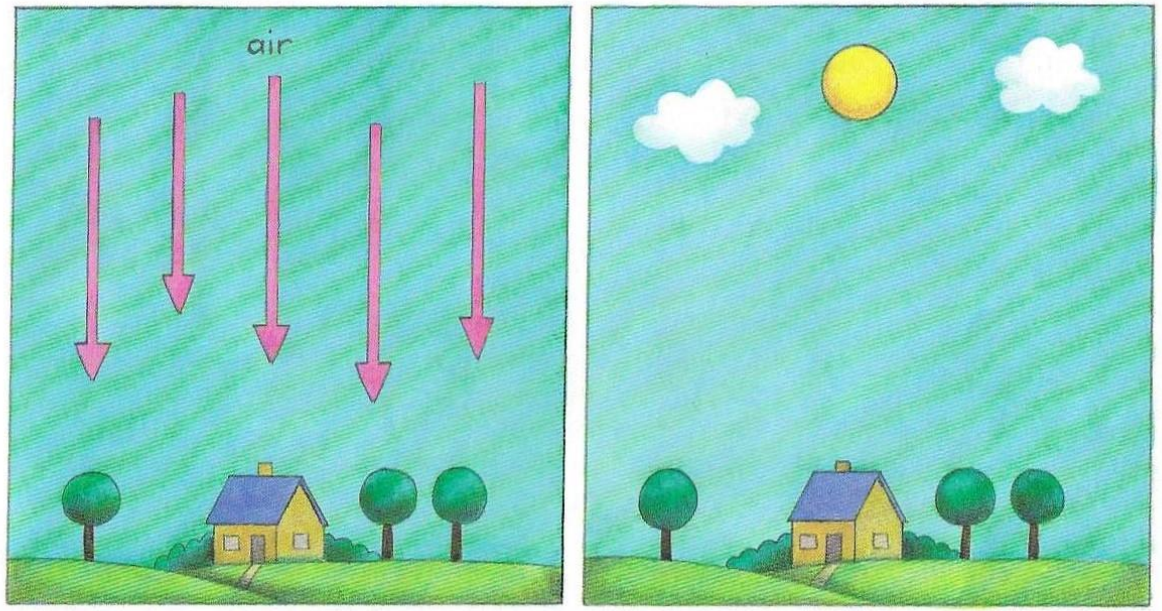


Using Diagrams and Illustrations (Visual Literacy)

"Look Back and Forth"



When air pressure is low, air is rising into the sky.
Water vapor in the air turns to liquid and clouds form.
As more air rises, the pressure gets lower and lower.
And the clouds get bigger and darker.
Lots of rain or snow may fall when the air pressure is low.



Luckily, the air pressure is high most of the time.
When air pressure is high, air is sinking toward earth.
The skies stay mostly clear.
A few puffy clouds may appear, but it won't rain.
The weather is dry and sunny when the air pressure is high.

For More Reading, Writing, and Science Support:

https://tinyurl.com/literacyvideos

(scroll down for links)

https://OnceUponAScienceBook.com

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- Integrating Reading and Science:
- Writing about Claims, Evidence, and Reasoning
- Sentence Frames for Reading, Writing, and Forming Science Knowledge

Middle/High:

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- Reading Strategies Part 1: Make it Make Sense: For Teachers in Grades K-12
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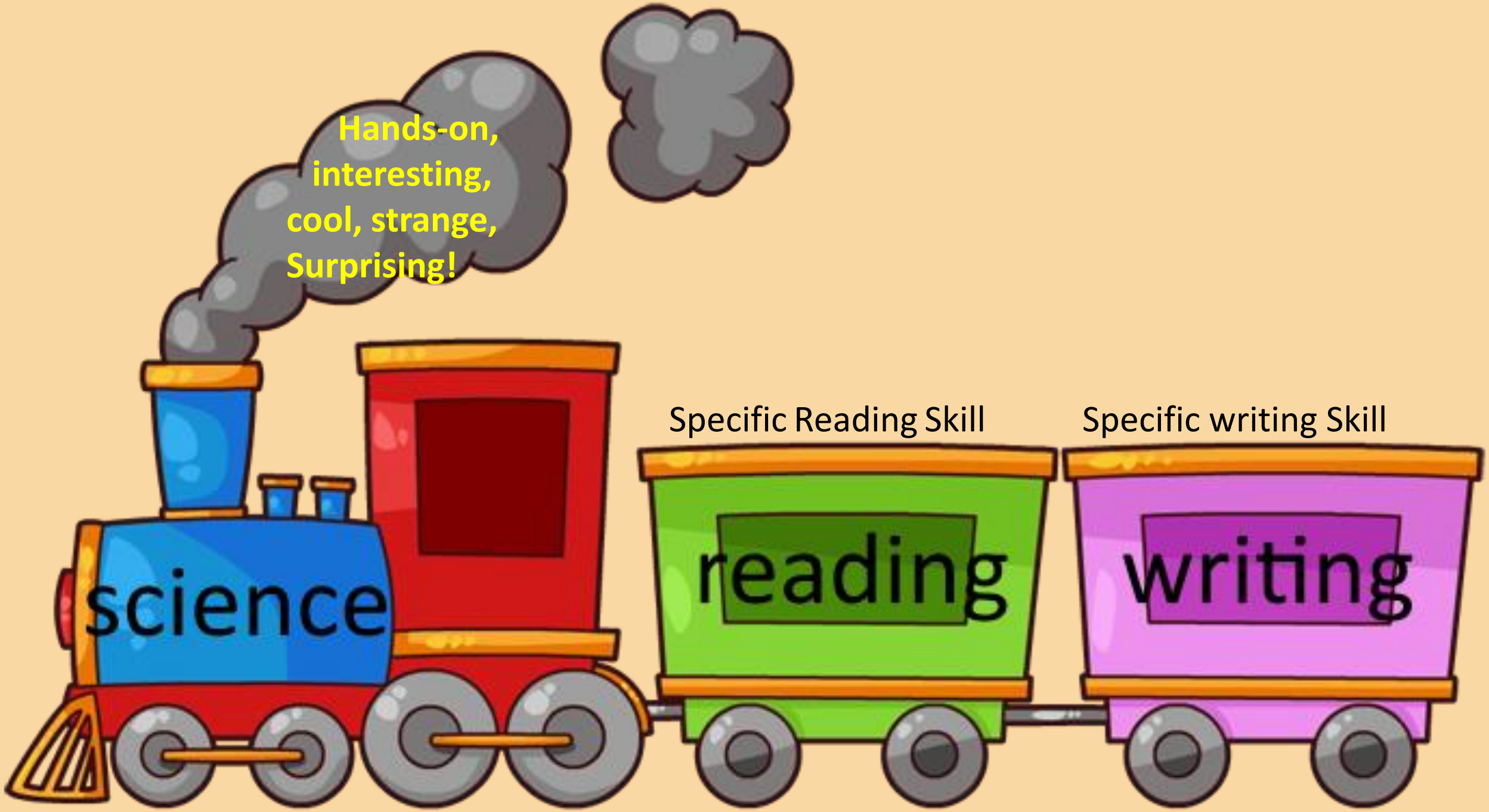
Links to online learning hyperdocs:

- 5th grade: https://docs.google.com/document/d/1beC1JTtgjIQb9rD7L4Km6dIA9l7EoBx625KpGFRIIec/edit?usp=sharing
- 4th grade: https://docs.google.com/document/d/1FpL9vyzdbQHe_3QkMt1lLDHgKtFkKmWrBh_WqEZfJ54/edit?usp=sharing
- 3rd grade:
- https://docs.google.com/document/d/173AwZ7E-0E-DVoSUgnanOkT0K0-59k1I7qhWmbeTCIY/edit?usp=sharing


Hands-on, interesting, cool, strange, Surprising!
Specific Reading Skill
Specific writing Skill
science
reading
writing

(Engage)

Exploration

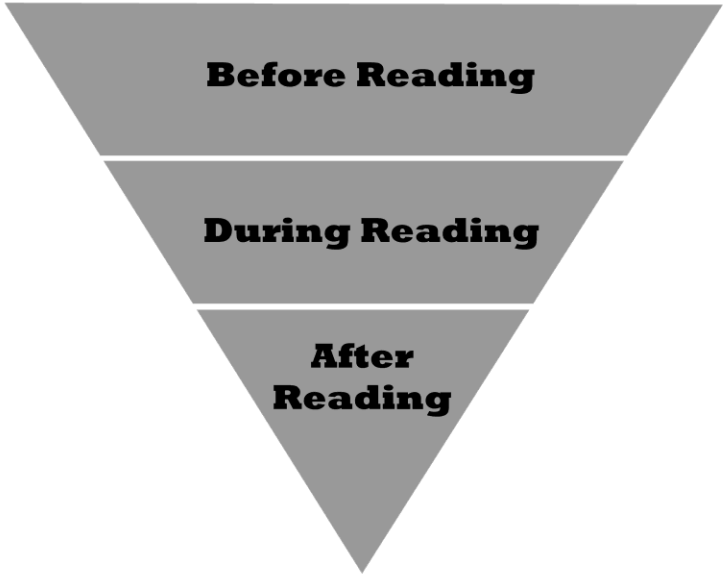
Explanation

Concept Application

(Evaluate)

Science Learning Cycle

+



Reading Lesson

(after Berkeley and Barber 2015)

=

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

Literacy Learning Cyce

Build a “sand mountain” in a container and experiment with changing it by pouring water, spraying water, blowing on it, etc.	Read an article about erosion on a mountainside.	Write a letter to a builder who plans to make a road on the side of a mountain, explaining the effects of erosion.
Measure the temperature change over time of a blanket on a table and a blanket on a person	Read the science textbook section on insulation	Make a claim about whether blankets make heat or trap heat, and explain why the blanket on the person was warmer than the blanket on the table
Watch a worm move and compare how it moves with how a person moves	Read about where worms live and what they eat	Explain how a worm’s style of movement matches its habitat

Let’s Chat.

- What questions or comments do you have about this model of merging science and literacy?
- What ideas do you have for teaching based on this model? Do you have lessons you could rearrange into this format?

- Let’s look further at why this lesson format works to support both reading and writing.

Dig Deeper: Reading

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 Charles 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.

A major issue for students reading science:

They do not know the things that the author assumes they already know.

Young California Condor

US Fish and Wildlife

"Some people were afraid the condor would soon be gone."

X

"I would think the people would be afraid when the condor was THERE."

Image courtesy NSF

~~extinction~~

~~biodiversity~~

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)


science
reading
writing

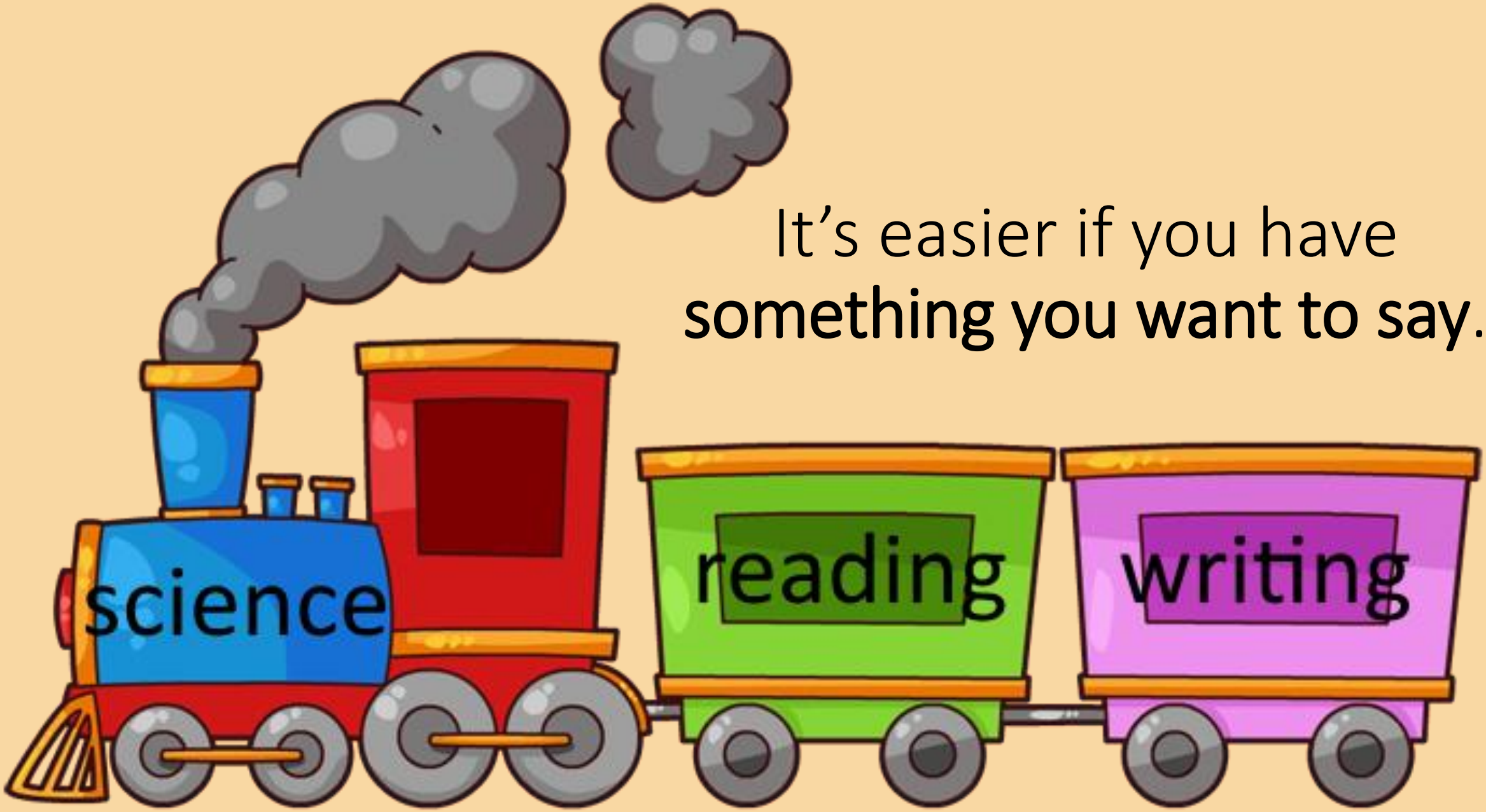
Dig Deeper: Writing

Raise your hand if you have ever…

- Put off answering an email that was going to require a lot of thought?
- Failed to write a thank-you note you knew you should write?
- Started to keep a journal but then it petered out?
- Procrastinated in writing up a report on something that you needed to get done?

Writing is hard work.

It’s easier if you have **something you want to say**.



Support students as they write: sentence frames (or mentor sentences)

Comparison Frame

_____ is similar to _____ because both _____.

Contrast Frame

_____ is different from _____ because one _____,

while the other _____.

Cause and Effect Sentence Frames:

- ___*(cause)*___ causes ____*(effect)*____ by _____ .
- Since/Because/Due to ____*(cause)*__ , _____*(effect)* .
- ___*(effect)*_____ , since/because/due to__*(cause)*__ .

Support by helping “frame up” an entire piece of writing.

- Which of the two heat sources do you think would be better at melting an ice cube? Write a paragraph to explain your answer. You may want to include the compare and contrast sentences that you wrote above.

- The Sun is different from ___electricity____ because one (the sun) _is natural__, while the other (electricity) _is human-made_.

3rd

How could we frame this?(students must help!)

- I think _____ would be better than _____ for melting the ice cube.
- Compare and/or contrast sentence(s)
- I would use _____ because _____.

I think electricity would be better than the sun for melting the ice cube. The Sun is different from ___electricity____ because one (the sun) _is natural__, while the other (electricity) _is human-made_. Also, electricity can be used any time, but the sun is only good during the day. I would use electricity to power a hairdryer and melt the ice because I could use it any time.

Support by helping “frame up” an entire piece of writing.

Pretend you are describing the motion of your object to a younger child. Explain why the object starts rolling, why it continues rolling at the bottom of the ramp, and why it eventually stops. You may wish to include the cause and effect sentence that you wrote above!

- *Gravity* caused *the ball to roll* by *pulling down on it*.

4th

How could we frame this?(students must help!)

- When I put my _____ at the top of the ramp, it _____.
- __*Gravity*_____caused _*the ball to roll*___by _*pulling down on it*____.
- When it got to the bottom of the ramp, it _____.
- (Add another cause and effect sentence)
- Eventually it _____.
- (Add another cause and effect sentence)

Support by helping “frame up” an entire piece of writing.

- It’s your turn to write a science “how-to” article. Tell the reader how to set up the computer simulation that you used earlier to test whether items or conductors or insulators. In your explanation, explain the difference between conductors and insulators. *You may wish to use the sentence you created earlier.*

___*Conductors*___are different from __*insulators*____because conductors __*let electricity through*____, while insulators __stop electricity_____.

5th

How could we frame this?(students must help!)

Explanation:

- ___*Conductors*___are different from __*insulators*____because conductors __*let electricity through*____, while insulators __stop electricity_____.
- In the circuit, the lightbulb lights up when _____.
- If the object is a conductor, you will see _____ because _____.
- If the object is an insulator, you will see _____ because _____.

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- 3rd grade:
- https://docs.google.com/document/d/173AwZ7E-0E-DVoSUgnanOkT0K0-59k1I7qhWmbeTCIY/edit?usp=sharing