Thanks for joining us early.

The webinar will start promptly at 4:00 p.m. ET

Welcome!

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Welcome!

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Before we get started…

- **Professional Development Certificate**
  - Will be sent via email within 48 hours.
- **Questions**
  - Use the ***Q & A option*** on the bottom of your screen to post a question
- **Polls**
  - Don't be shy! Every voice counts!
- **Recording & More**
  - A **recording** of this presentation will be made available to you after the webinar, as well as access to **step-by-step instructions** for the activities highlighted today, a **book recommendation** and a **resource list** at https://www.shopbecker.com/resource-cafe/workshops/

About Me

- Certified K-8 Teacher
- 15 years as a science educator at The Academy of Natural Sciences in Philadelphia, PA

Standards Alignment

- Children have a natural desire to explore, to build, and to question. Through open-ended exploration, children interact with materials in nature and scientific materials/tools to explore and learn about their world. (ECERS-3)
- Children have an innate desire to experiment and investigate while gathering data to make conclusions. (PA Early Learning Standards)
- Adults facilitate children's development of those skills that support discovery and inquiry while promoting their natural curiosity.
- Children first construct scientific knowledge by using their five senses to interact with the environment. That is how they make sense of their world. (Head Start)
- Children's immediate environment and daily surroundings provide the best context for science learning. Some ways they do this include observing, measuring, investigating, sorting, and comparing. (PA Early Learning Standards)
- Adults scaffold children's thinking by asking open-ended questions that encourage problem-solving and critical thinking. (PA Early Learning Standards)
- Young children's inclination to be curious, explore, experiment, ask questions, and develop their own theories about the world makes science an important domain for enhancing learning. (Head Start)

Science for Littles

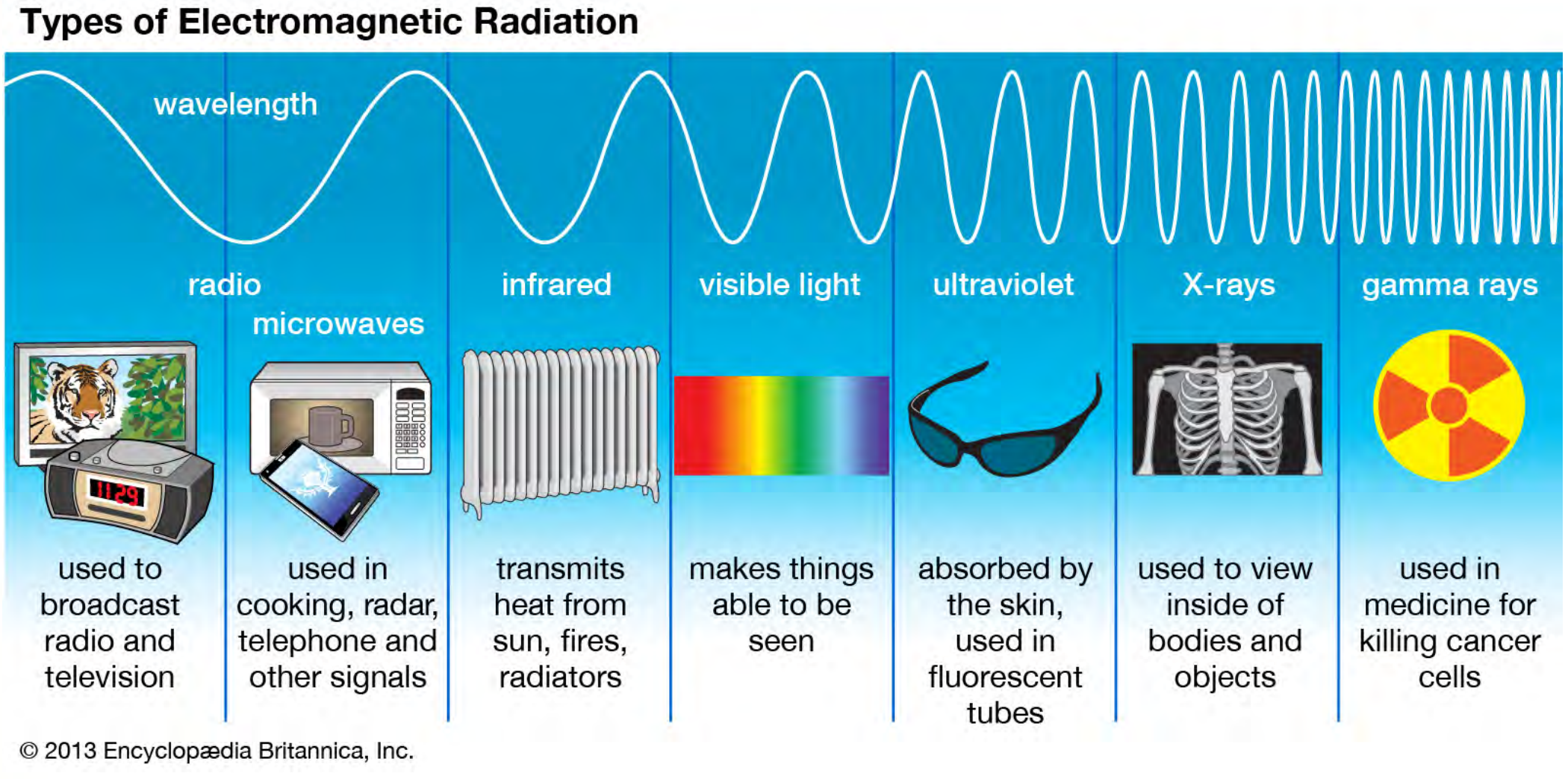
In preschool, science is more about practicing skills and fostering a love of science than content

- **Making Observations** is the #1 skill to practice in early education
- **Asking Questions** is #2!
- Other skills that can be fostered through science instruction in the ECE classroom:
  - **Cause and Effect**
  - **Following Directions**
  - **Order of Operations**
  - **Background Knowledge Acquisition**

Poll

Are your science lessons mostly demonstrations or hands-on experiments?

Hands on Science: The Sun

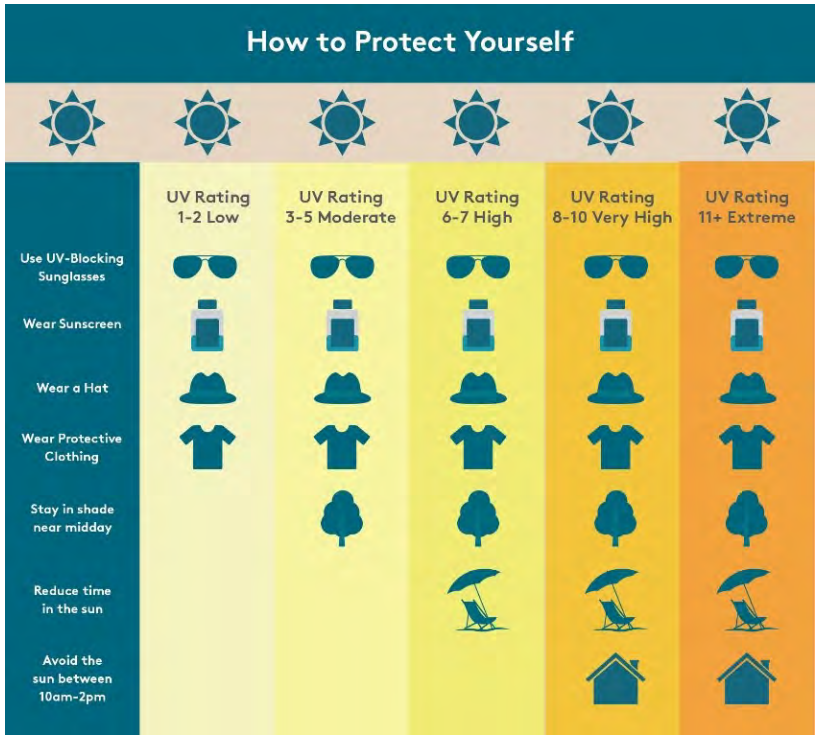


Hands on Science: The Sun

UV light and Sunscreen

Supplies

- UV sensitive beads
- Plastic Cups
- Cling Wrap
- Sunscreens with different SPF ratings
- T-shirt
- Sunglasses
- Spray Sunscreen
- Sunshine or a UV flashlight



Tips:

- Make predictions (and try to get to the why of those predictions)
- Change the variables- time of day, area of the playground, cloudy day, length of time
- Label everything as you build the experiment
- Bring the cups inside before you peel back the plastic!

Hands on Science: The Sun

Sun Prints

Tips

- Flatter objects will give a clearer outline
- Mix natural and manmade objects
- Experiment with layering
- Watch out for windy conditions (and impatient little artists)
- Let the paper dry flat in the classroom
- The images will sharpen up as the paper dries

Natural objects

- Leaves and Petals
- Sticks and Stems
- Rocks and Sand
- Crystals and Gems
- Feathers and Bark

Manmade Objects

- Flat toys and Shapes
- Washers and Tools
- Cookie cutters and Foil
- Paper and Fabric

Hands on Science: The Sun

Poll

How likely are you to use these sun activities in your classroom?

Book Break: Nonfiction Books

Uses of Nonfiction Books:

- In centers
- Small group instruction
- Send home for book lending
- Supplemental to story time

Choosing Nonfiction Books

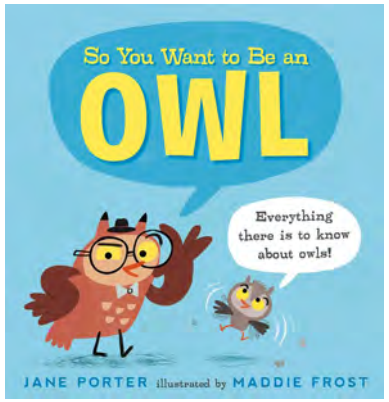
- Offer both illustrated books and books that have photographs
- Look for diagrams with arrows, numbers, timelapse images
- Provide books above reading/comprehension level- if they have good pictures!
- Errors? Just correct and tape over it!

Making the Most of Nonfiction Books

- Post-it questions
- I Spy
- Make a classroom documentary or encyclopedia
- Provide complementary images to cut, laminated images to draw on, etc.

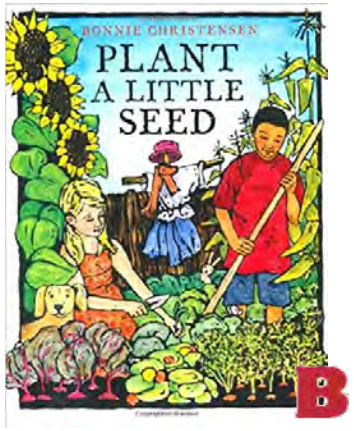
Book Break: Nonfiction Books

Acorn Books



Jane Porter

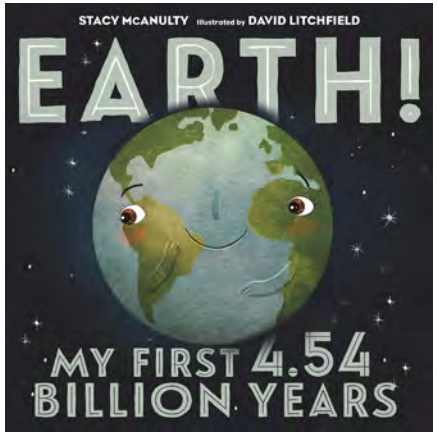
Carol Thompson



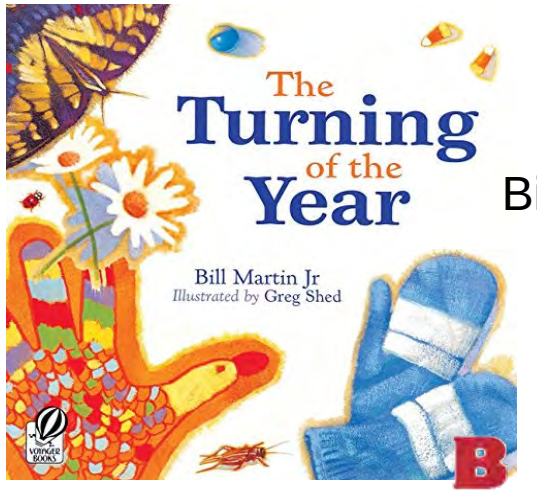
Bonnie Christenson

Kristen Foote

Stacy McAnulty

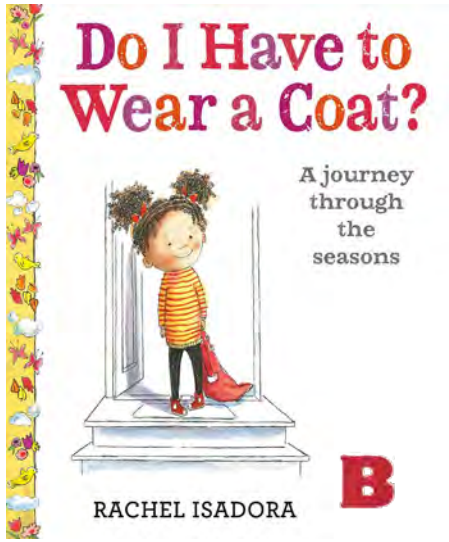


Book Break: Four Seasons Books

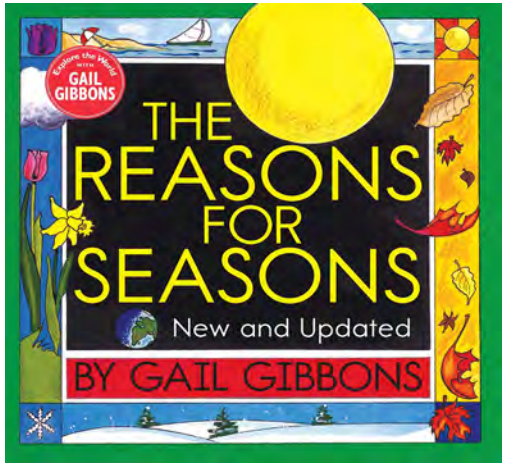


Bill Martin Jr.

Rachel Isadora



Gail Gibbons



Jessica Courtney-Tickle

Hands on Science: Nighttime Learning

The Moon

- **Craters on the Moon:** Fill a baking pan with about an inch of flour. Sprinkle coco powder over the surface of the flour. Drop small objects- marbles, stones, pom poms- into the pan. What happened?

- **Classroom in Orbit:** Choose students to be the sun, the Earth, and the moon. Can the moon orbit the Earth while the Earth orbits the sun?

- **Phases of the Moon Ball:** Paint a ball with one white side and one black side. Let students take turns being the Earth and the sun. The Earth stands in middle and the moon orbits the Earth. The sun will stay still during this demonstration and is in charge of making sure the white side of the side of the moon is always facing the sun.

Hands on Science: Nighttime Learning

Nocturnal Animals

Bat and Moth

Play a slowed down version of “Marco Polo.” The player who is ”it” will be the bat and will call out the word “BAT!” All of the other players need to respond “MOTH!” so the bat has a chance to echolocate them!

Owls

Eyes: Build ”Owl Eyes” by fastening two toilet paper tubes together like a pair of binoculars. What can you see if you stand in one spot with your owl eyes? What about without them?

Ears: Pick a sound- it can be snapping, breaking a stick, or a shaker egg. That will be the animal your owl is hunting. Have your students stand close to you. Give a thumbs up if they can hear the noise. Step back 10 big steps. Make the sound. Can they hear it? Move farther back and try again. A great grey owl can hear a beetle rustling through grass about a half a mile away. How do your ears stack up?

Hands on Science: Nighttime Learning

Glow!

Chemiluminescence:

Light that comes from a chemical reaction like glow sticks and fireflies (bioluminescence)

Glow Stick Science: Break three glow stick- make sure they are the same size and thickness- and place one in very cold water, another in room temperature water and a third in warm water.
What happened?

sciencewithtoys.wikispaces.com

Chatting Fireflies: Fireflies use their blinking lights to communicate with each other. Grab a flashlight and get to chatting like these bugs.
Decide what “yes” and ”no” would look like for your little fireflies and strike up a conversation!

Ariel Zych

Hands on Science: Nighttime Learning

Poll

How likely are you to use these “Nighttime Learning” activities in your classroom?

Book Break: Fiction Books

Books don’t have to be factual to be impactful!

Fiction in ECE science instruction can help students to:

- Contextualize complex scientific ideas
- Think critically about real vs. imaginary
- Build emotional connections to content

Choosing Science-Centered Fiction Books

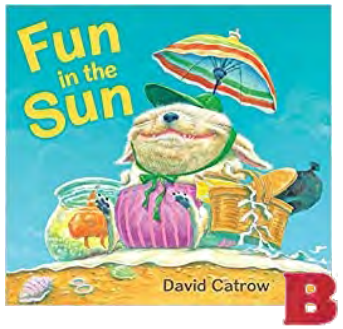
- A realistic setting and plot are more helpful than realistic characters
- Look for books in which characters are curious, search for solutions through experimentation or research, or have one idea about something and change their minds when presented with evidence
- Pick books that are fun (and sometimes ridiculous!)

Making the Most of Fiction Books

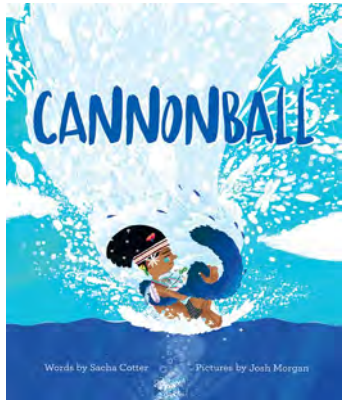
- Pair with nonfiction books on similar topics
- Change the setting, change the story
- Questions, questions, questions!

Book Break: Fiction Books

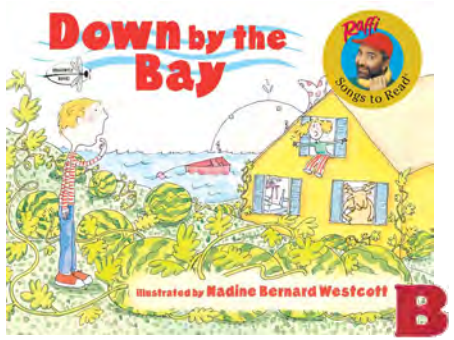
Jason Carter Eaton



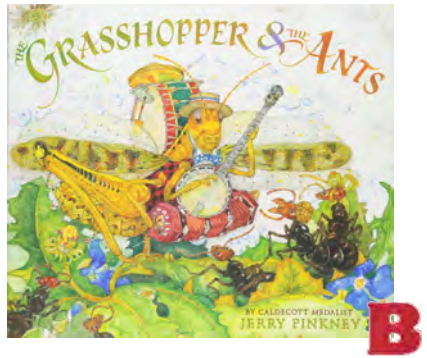
David Catrow



Sacha Carter



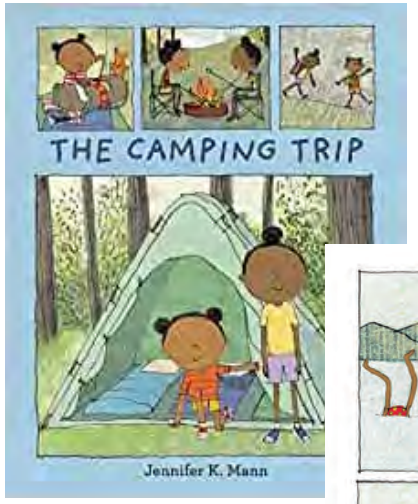
Nadine Bernard Westcott



Jerry Pinkney

Megan Maynor

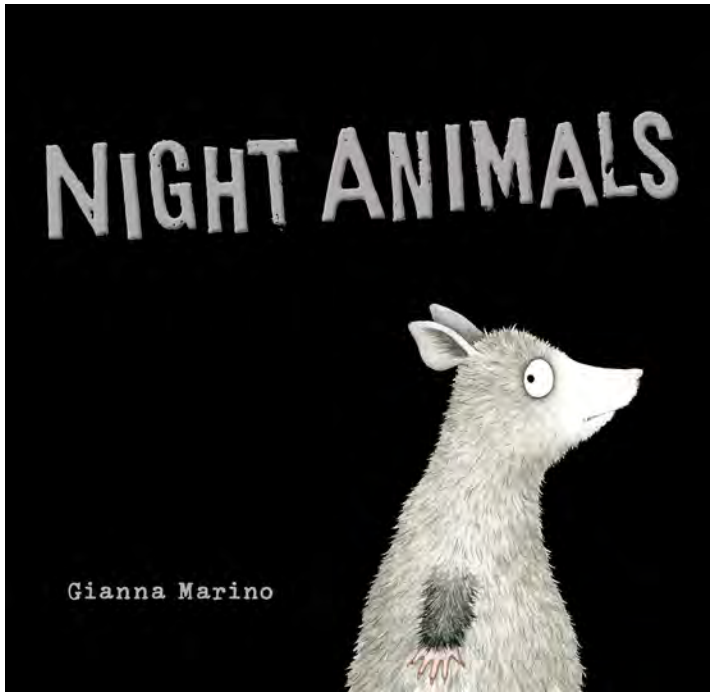
Allison Farrell



Jennifer K. Mann

Book Break: Fiction Books

Lizi Boyd



Gianna Marino

Hands on Learning: The Colors of Summer

Rainbows without the Rain!

Making “rainbows” in the classroom is a great wat to encourage experimenting and inquiry!

Supplies:

- Old or blank CDs and DVDs
- Prisms or acrylic crystals
- Flashlights, nightlights, LED lanterns, kid-safe desk lamps
- Construction paper
- Markers, crayons, colored pencils
- Water in clear plastic bottles, colored plastic bottles, mason jars
- DIY dark box (glue black paper to the inside of a cardboard box)
- Scrap paper

Hands on Learning: The Colors of Summer

Fireworks without the Fire!

Making observations: "Fireworks" in a Jar

Supplies:

- Jar or clear cup
- Warm water
- Vegetable oil or baby oil
- Fork
- Food Coloring

1. Fill your jar 3/4 full with warm water.
2. In a separate bowl add a few drops of food coloring to about 3 tablespoons of oil. Stir it up. (The food coloring will not mix with the oil.
3. Slowly pour the oil into the water and make observations!

Making Predictions: Splatter "Fireworks"

Supplies:

- Eyedroppers
- Water
- Food coloring
- Construction paper or watercolor paper
- Crayons

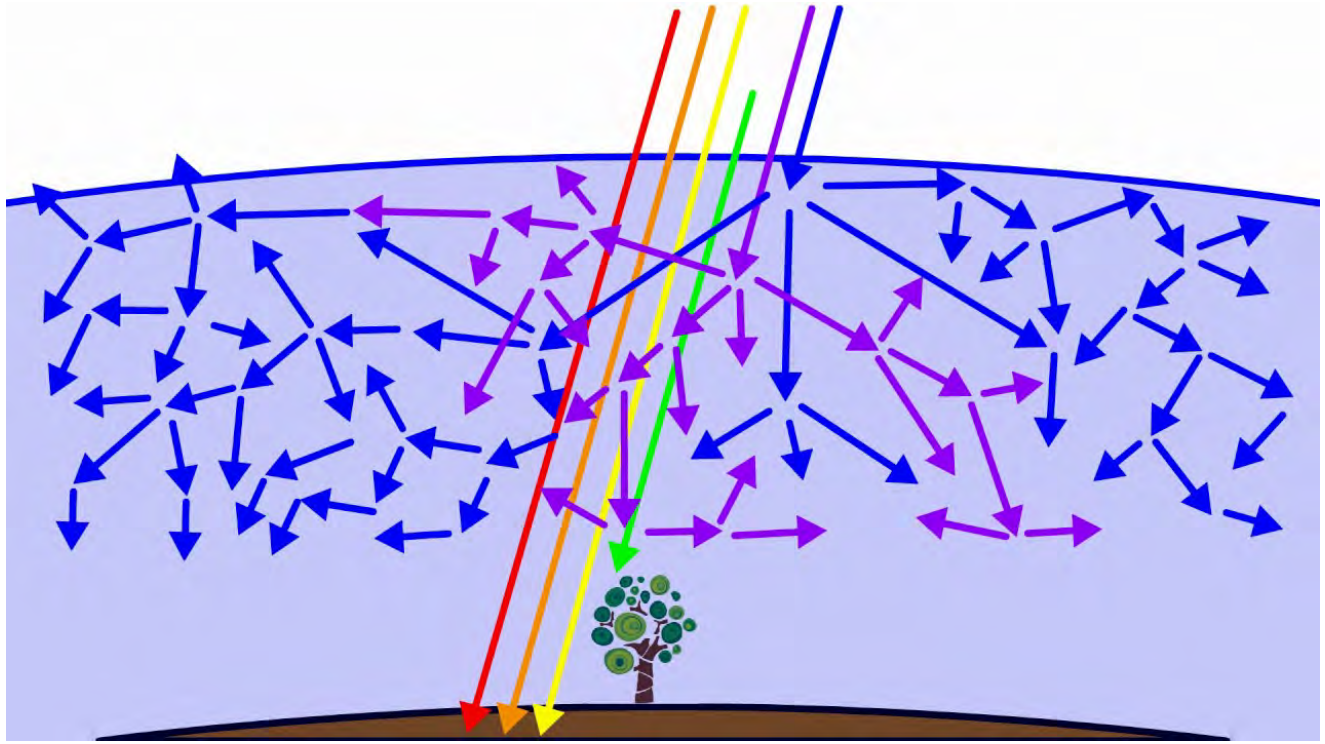
1. Mix the water and food coloring. Make it nice and bright!
2. Tell your students that you will be dropping a single drop of water on the paper. Predict what will happen.
3. Drip water from about 2 inches high. Explain that you will be dripping from higher next time.
   What do they think will happen this time?
4. Repeat from different heights to make splatter-works!

Hands on Learning: The Colors of Summer

Why is the Sky Blue?

Supplies:

- A glass of water
- A few drops of milk
- A flashlight- the light on your phone will work



Hands on Science: The Colors of Summer

Poll

How likely are you to use the “The Colors of Summer” activities in your classroom?

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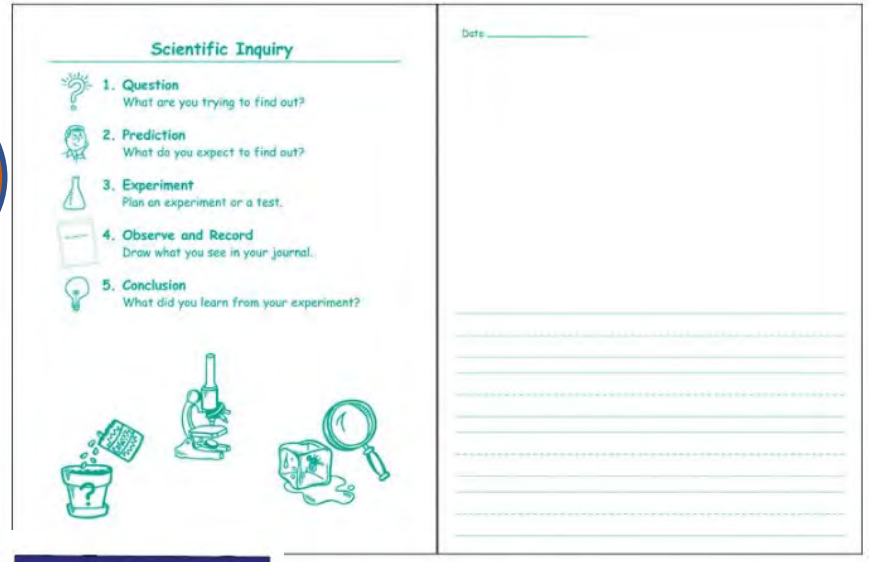

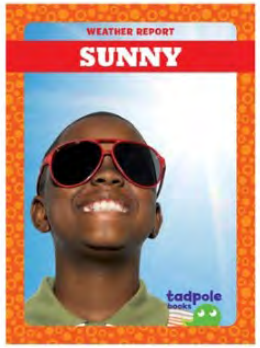

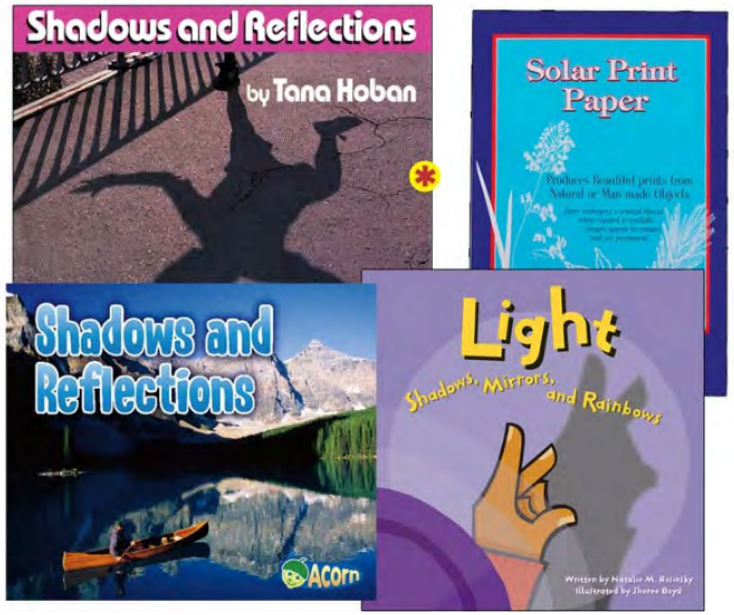

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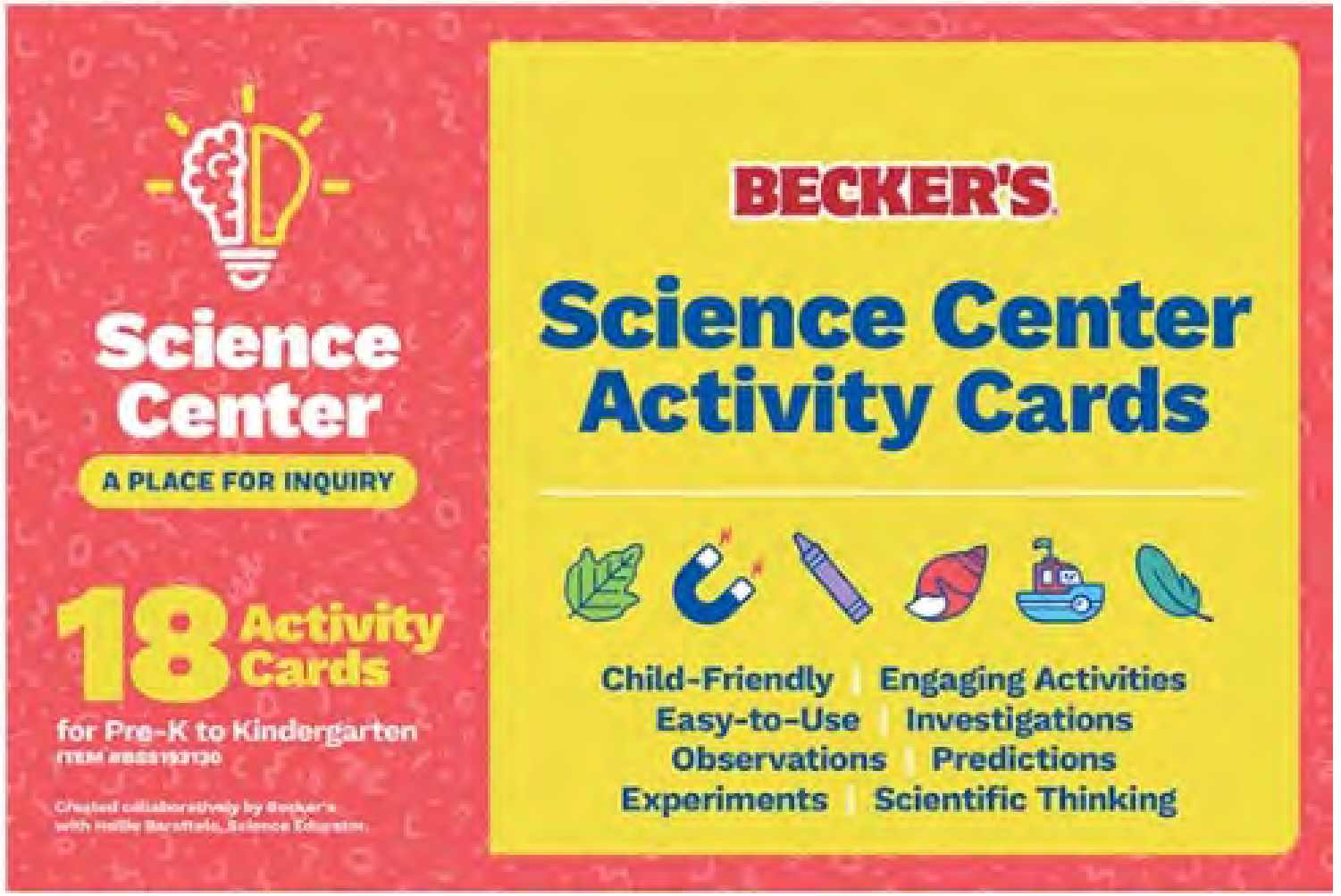

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