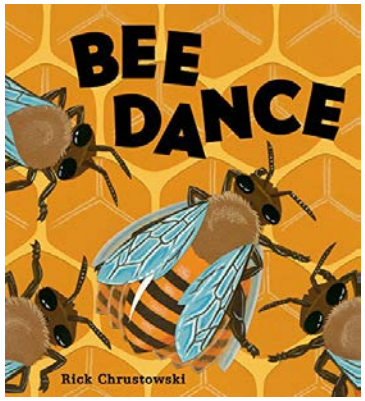
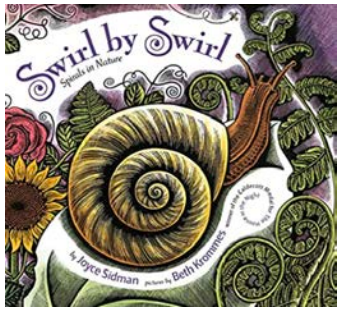
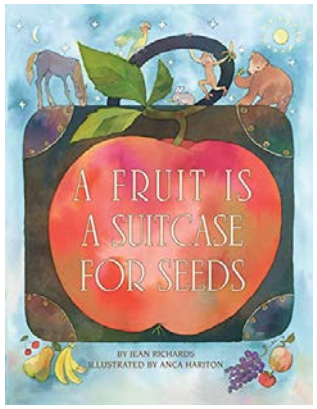
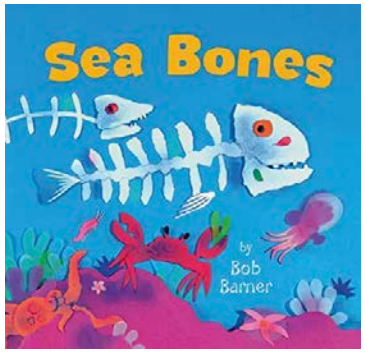
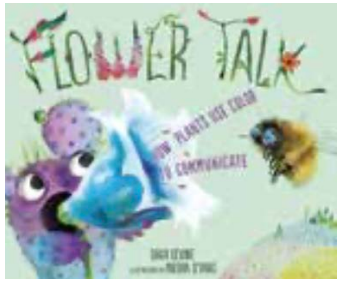
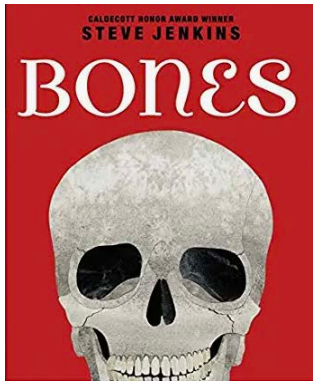


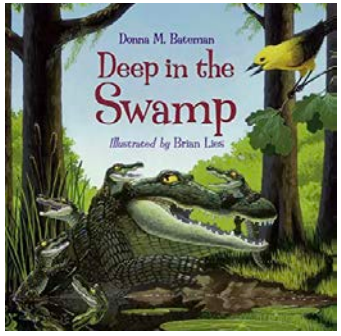


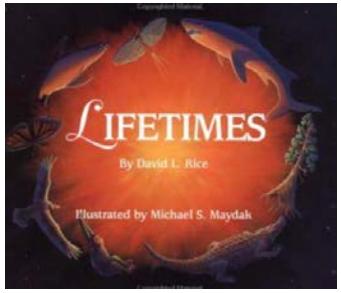


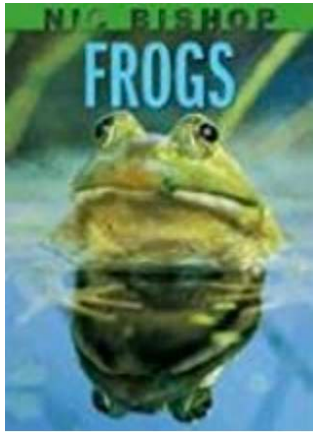












Ten Science Trade Books & Ten Activities

Literacy & Learning Conference,
February 26, 2022
Eastern Illinois University
Denise E. Reid
dereid@eiu.edu

Why Science & Literature Belong Together

Combining science and literature …

- helps children explain events they observe.
- helps children practice problem-solving skills.
- helps children develop recording skills.
- can help children correct science misconceptions.
- helps children understand how science has affected human history.
- helps them appreciate that science is dynamic.
- helps children understand that science can be serendipitous.
- allows children to experience scientists, sleuths, and explorers.
- allows children to use science science and engineering practices

Ideas for Using Literature in Science

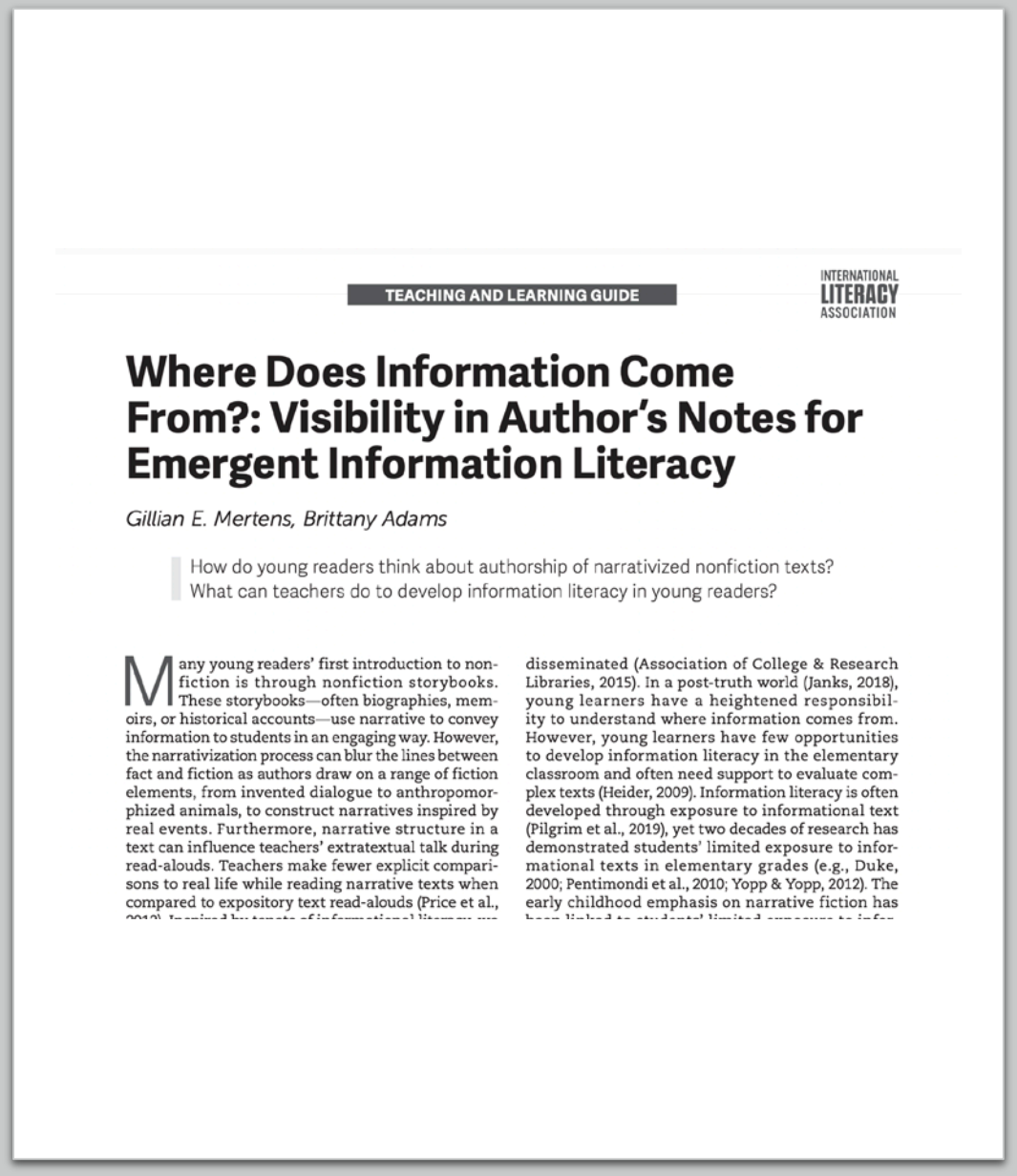
- Display a variety of books on a topic of study.
- Include in science center with hands-on materials and writing and drawing materials.
- Feature science authors.
- Invite children to participate in “science” literature groups.
- Read science books aloud to the class. (Think-Alouds)
- Jot down notes and questions in science notebook.
- Keep a science “Recommended Reading” bulletin board.
- Use books for creating class books.

Information Literacy

"… non-fiction storybooks provide access to new information while presenting the content in familiar narrative patterns."

"… author's notes describe how authors construct narratives from background or contextual information."

(Mertens & Adams, 228)



TEACHING AND LEARNING GUIDE

INTERNATIONAL LITERACY ASSOCIATION

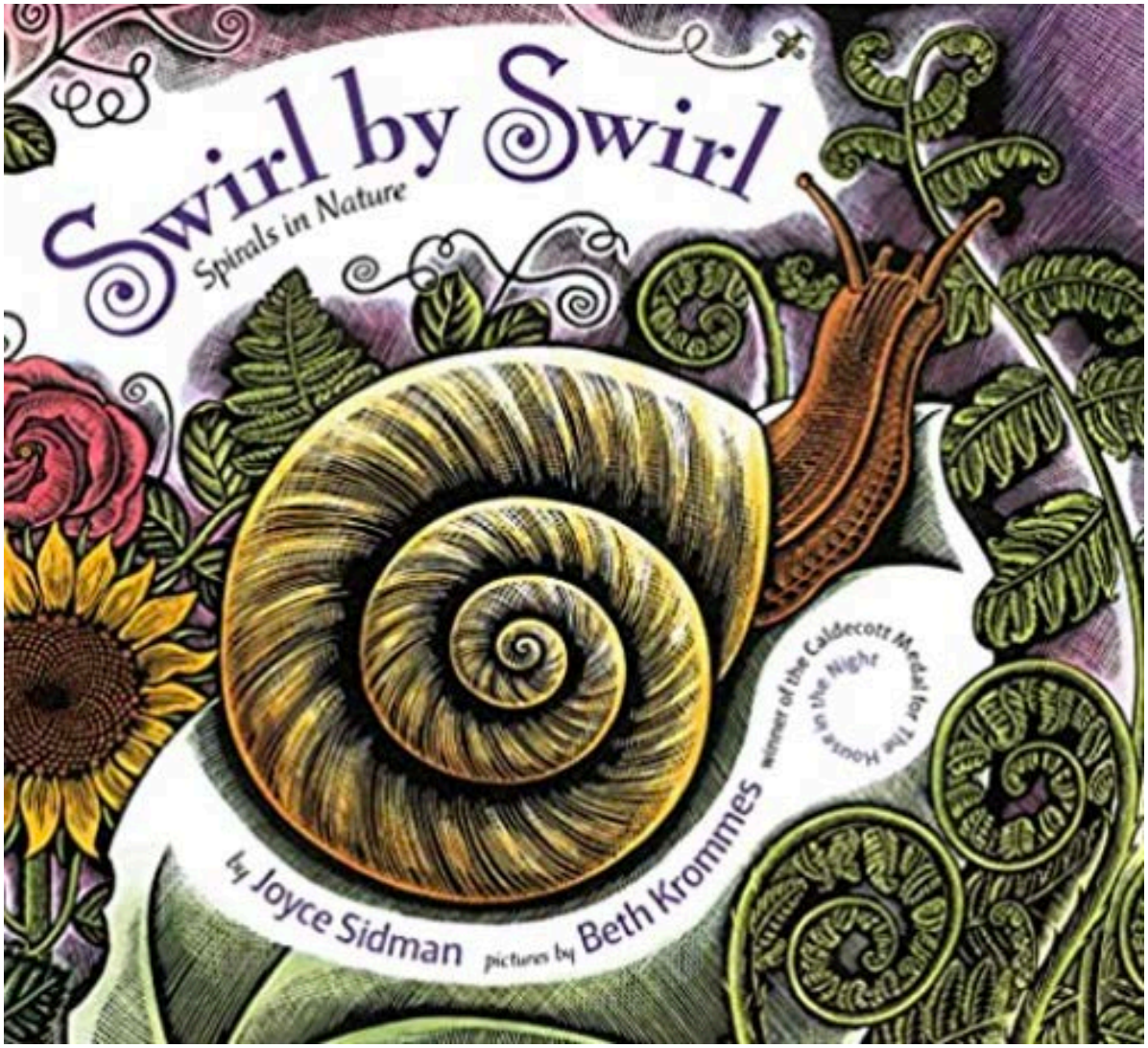
Where Does Information Come From?: Visibility in Author's Notes for Emergent Information Literacy

Gillian E. Mertens, Brittany Adams

How do young readers think about authorship of narrativized nonfiction texts? What can teachers do to develop information literacy in young readers?

Many young readers' first introduction to nonfiction is through nonfiction storybooks. These storybooks—often biographies, memoirs, or historical accounts—use narrative to convey information to students in an engaging way. However, the narrativization process can blur the lines between fact and fiction as authors draw on a range of fiction elements, from invented dialogue to anthropomorphized animals, to construct narratives inspired by real events. Furthermore, narrative structure in a text can influence teachers' extratextual talk during read-alouds. Teachers make fewer explicit comparisons to real life while reading narrative texts when compared to expository text read-alouds (Price et al.,

disseminated (Association of College & Research Libraries, 2015). In a post-truth world (Janks, 2018), young learners have a heightened responsibility to understand where information comes from. However, young learners have few opportunities to develop information literacy in the elementary classroom and often need support to evaluate complex texts (Heider, 2009). Information literacy is often developed through exposure to informational text (Pilgrim et al., 2019), yet two decades of research has demonstrated students' limited exposure to informational texts in elementary grades (e.g., Duke, 2000; Pentimondi et al., 2010; Yopp & Yopp, 2012). The early childhood emphasis on narrative fiction has


Swirl by Swirl
Spirals in Nature
by Joyce Sidman
pictures by Beth Krommes
winner of the Caldecott Medal for The House in the Night

"Swirl by Swirl: Spirals in Nature"

by Joyce Sidman and pictures by Beth Krommes

How do you think a spiral can …

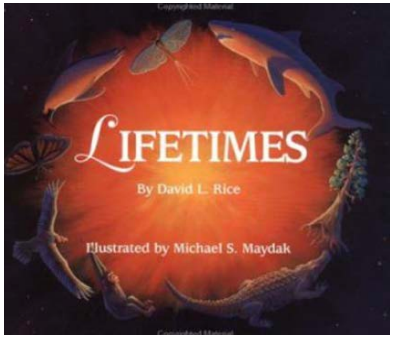
… be a snuggling shape?	**… be a growing shape?**	**… be a strong shape?**
… reach out?	**… be clever?**	**… is beautiful?**

“Swirl by Swirl: Spirals in Nature”

by Joyce Sidman and pictures by Beth Krommes

1. Have students write or draw a prediction.
2. As you read the story, have students talk about the items on the chart.
3. After reading the story read the author’s notes.

"Lifetimes" by David L. Rice and Illustrated by Michael S. Maydak



A lifetime for a hermit crab is about five years.

Hermit crabs are very good at taking action to make their lives better. Nature doesn't give them a shell for protection, so they find shells that are empty and recycle them. They use these shells like "motor homes" until the crabs get too big for them. Then they move into larger shells. Another neat trick of the hermit crab is to put a sea anemone on top of its shell. The poisonous arms of the anemone keep the octopus or squid from eating the crab for dinner. Since sea anemones can't move around very well by themselves, "piggy-backing" on the crab is a special treat that allows them to find food as the crab moves along.

https://www.thesprucepets.com/what-do-hermit-crabs-eat-1238245

1. This is the type of book that could be read each day. Or students could be assigned different years and information.
2. Create a timeline around the room, using standard units of measurement for years, until you get to numbers too large to represent. Then use different colors to represent thousands, millions, and billions of years.
3. Students create picture cards with data about each animal, plant, or event.

“Once Upon a Jungle” by Laura Knowles and James Boast

The Story of a Food Chain

After reading and discussing the book, share the end pages of the text.

“Look through the book again. See if you can spot which are the producers, consumers, and decomposers.”

Create a word wall with pictures and definitions.

Create a food chain.

"Frogs" by Nic Bishop

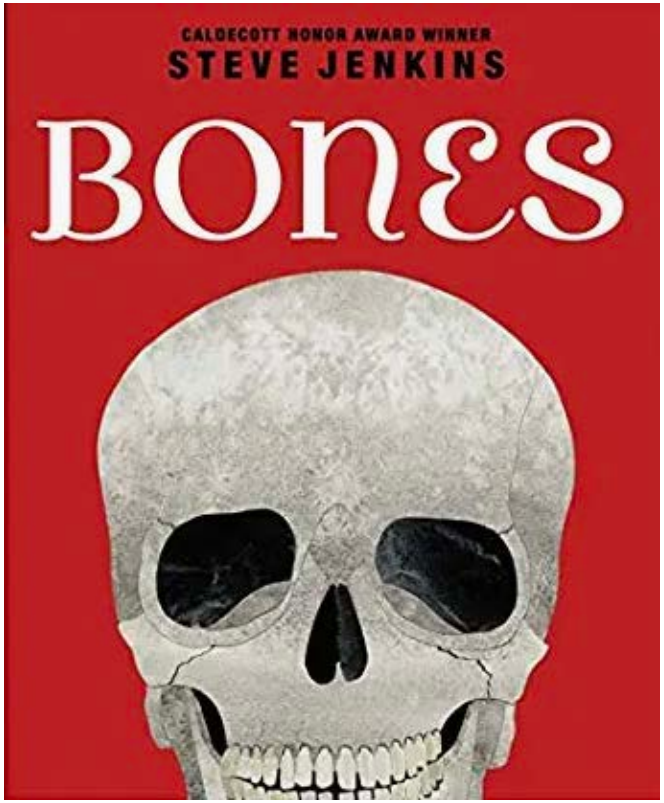
This is a great book to read during an interactive read aloud.

- Prior to reading the text, read the author's notes at the back of the book.
  - Ask questions about Nic Bishop and all of the work he did in gathering photographs for his book.
  - Students will be able to connect information and pictures in the text that he shared in the author's notes.

"Deep in the Swamp" by Donna M. Bateman
Illustrated by Brian Lies

1. After reading the story, make a list of the plants, animals, and places described in the book.
2. Make a copy of each of the plants, animals, and places in the end notes for the book.
3. Give each child one of the descriptions to read.
4. Students create a diorama.

"Bones" by Steve Jenkins

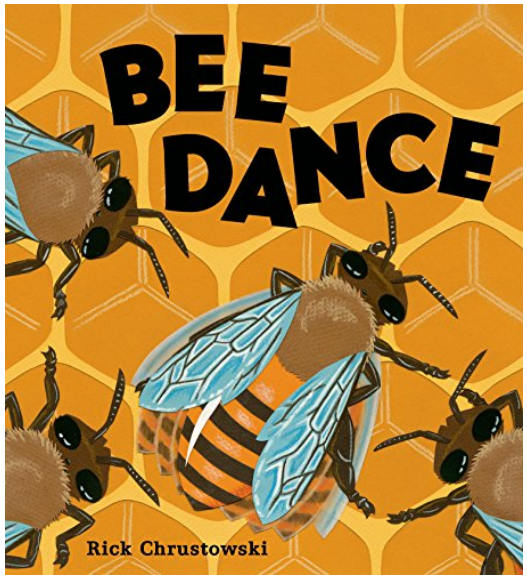


1. As you read this book, let students compare and contrast the skeletons.
2. Cover up the names of the animals, and let them guess who's skeletons they are.
3. Share the end notes with the students.
4. Dissect owl pellets, and let the students compare and contrast the skeleton found inside with the human body.

"Sea Bones" by Bob Barner

Sea Facts	Jelly Fish	Angler-fish	Sting Ray	Seal	Anemone	Crab	Octopus	Clown Fish
Is it a fish?								
Does it have a backbone?								
What kind of skeleton?								
What does it eat?								

"Bee Dance" by Rick Chrustowski



The author dedicated this book to Laura Godwin, her beekeeper father, and all beekeepers around the world.

Why do you think he did this?

Read and discuss the book.

- What is a honeybee gold mine?
- How did the author describe the bee's tongue?
- Why does the bee dance for the other bees in the hive?
- What do they use nectar far?
- How do the bees carry the pollen?

Read the author's note to learn more about why honeybees dance?

Science & Children Journal

~

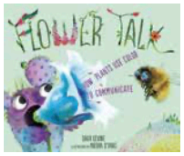
Teaching Through Trade Books

Pollen Transfer and Pea Plants

By Christine Anne Royce

While students may have considered that traits are passed down from one generation to another in animals and people, they may not have considered that traits and variation in species occur in plants. In the investigation for primary students, the focus is on how the external characteristics such as color and shape help flowers attract insects and birds, which helps in pollination. Students in the intermediate grades engage in an investigation that involves careful observation and plant characteristic tracking similar to what Mendel did in his famous pea plant experiment.

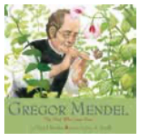
This Month's Trade Books



Flower Talk: How Plants Use Color to Communicate
By Sara Levine
Illustrated by Masha D'Yans
ISBN: 978-1-5415-1928-2
Millbook Press
32 pages
Grades 1–3

SYNOPSIS

Did you know that plants communicate? A cactus with an attitude narrates this story that explains how a plant uses structure, color, and odor to communicate with different animals. Vivid illustrations accompany text that helps to paint the picture for student understanding.



Gregor Mendel: The Friar Who Grew Peas
By Cheryl Bardoe
Illustrated by Joseph A. Smith
ISBN: 978-1-4197-1840-3
Abrams Books for Young Readers
32 pages
Grades 3–6

SYNOPSIS

This biography of Gregor Mendel explains both parts of his life and his life's work—understanding inheritance of traits. Included within the story is how he became interested in inherited traits as readers are introduced to his famous experiment of tracking the different traits of peas. Descriptive text and informative illustrations help the reader understand his experiment.

ADDITIONAL BOOKS

Gray, R. 2015. *Flowers are calling.* Boston: Houghton Mifflin Harcourt.

Kaner, E. 2020. *Pretty tricky: The sneaky ways plants survive.* Ontario: Owlkids Books.

5E Model - Engage

Look at the pictures of the flowers and animals.

What do you wonder?

What do you notice?








5E Model - Explore

EQ: How do color and shape help attract different pollinators?

Station #1: Sipping nectar

You are a hummingbird who is visiting flowers for food.

Pretend the straw is the beak of a hummingbird and carefully dip it into the center of the flower to sip some nectar.

What do you notice when you remove the straw from the flower? Record what you observe on your student sheet.

Repeat the process by moving to a different flower and sipping the nectar.

Station #2: Landing on a Platform

You are a butterfly who is visiting flowers.

Make observations about the different flowers. Write or draw what you notice.

Pick up your butterfly model and land on one of the flowers and then leave the flower like a butterfly would.

What do you notice when you leave the flower? Record what you observe on your student sheet.

Repeat the process by moving to a different flower and having your butterfly land on it.

Station #3: Pollen Collecting

You are a bee who is collecting pollen from flowers.

Make observations about the different flowers. Write or draw what you notice.

Pick up your bee model and land on one of the flowers. Have the bee crawl around the flower by moving your model to different spots. Then have the bee take flight and leave the flower.

What do you notice when you leave the flower? Record what you observe on your student sheet.

Repeat the process by moving to a different flower and landing on it.

5E Model - Explain

Begin by asking questions about what they observed:

- What represented the pollen in each of the stations?
- What did you notice happened to the flower as you moved to each flower?
- Why do you think this is important for the flower?

Finish reading the story, stopping to ask questions:

- p. 8 Why do you think the author says the flowers advertise that they are there?
- p. 12 Why is the color of a flower important?
- Continue with the interactive read aloud, stopping to ask questions.

5E Model - Elaborate

At the beginning of the book, the narrator asked them if they would do him a favor and *“tell the other humans about what makes flowers attractive to pollinators”* and how they need to help.

1. Give each student a picture of a flower.
2. Have the students think about what type of pollinator would be attracted to that flower and why.
3. Create an informational poster that tells other humans about how flowers talk to different animals and how that information is communicated.

5E - Evaluate

1. Students made observations and ask questions about the flowers and different pollinators.
2. Students make observations during the stations.
3. Students engage in an interactive read-aloud, discussing and asking questions.
4. Creation of the poster demonstrates understanding of the relationship between flowers and pollinators

"A Fruit is a Suitcase for Seeds" by Jean Richards
Illustrated by Anca Hariton

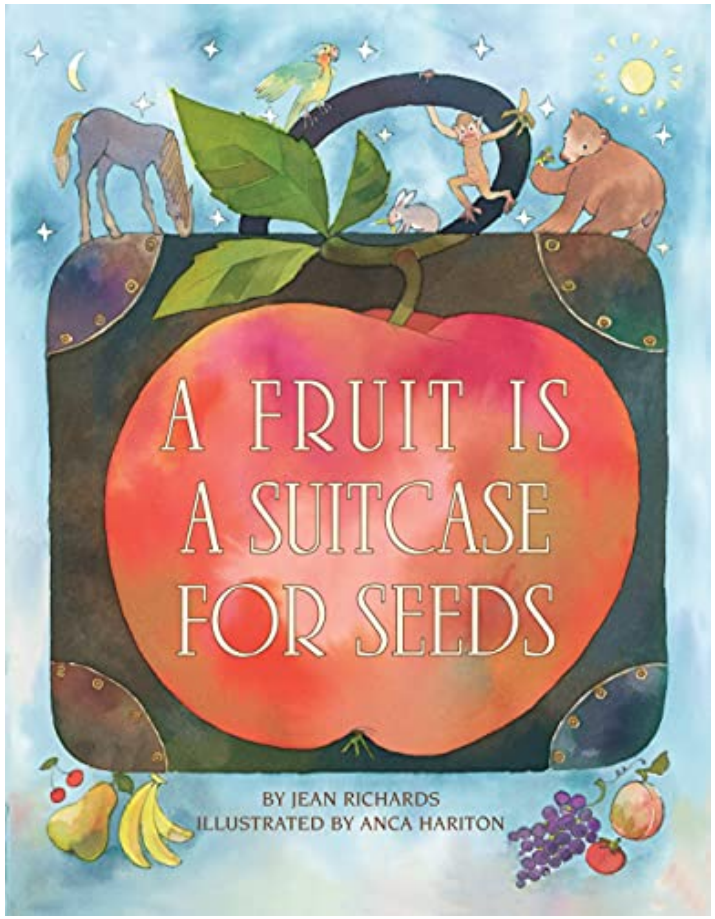
After reading the text, have the students make a list of questions they have about seeds?

Then share the "Question and Answer" section in the back of the book.

Research any other questions students may still have.

Bring in a variety of fruits, cut them open and observe the seeds inside of them.

Make a fruit salad!



Hiding in Plain Sight

How to identify and use trade books to support the 5E Instructional Model

By Michelle Forsythe, Julie Jackson, and Leo Contreras

Using trade books to support science instruction is a time-honored tradition. A well-chosen book can generate interest in a science topic, present a problem, challenge misconceptions, and explain content. The Children's Book Council and NSTA review hundreds of books yearly and publish their recommendations as the Outstanding Science Trade Books for Students K–12 list (see Internet Resources). In addition, the *Science and Children* column Teaching Through Trade Books recommends two books per issue. These reliable resources often include ideas for using trade books to support science instruction.

However, your school and classroom library collections are likely filled with other high-quality trade books not on these lists. These books are hiding in plain sight, just waiting to enrich your science teaching. Yet, deciding the best way to integrate these books in inquiry lessons can

PHOTO COURTESY OF THE AUTHOR

A read-aloud captures students' attention.

Instructional Model and explain how we select trade books and align literacy strategies to enhance each phase. In addition, we highlight some of our

reading levels can often be used with older students to deepen their understanding of science concepts. The focus here is not to teach students how to read with these books but rather to use these books to help teach science concepts. However, "reading to teach" in science can support "teaching to read" in English language arts, as many aspects of scientific practice parallel metacognitive reading strategies, including making observations, predicting, inferring, comparing and contrasting, classifying, summarizing data, and recognizing cause-and-effect relationships (Fountas and Pinnell 2006; NGSS Lead States 2013).

ENGAGE

Engage activities are brief. They are related to the science content included in state or national standards but do not explicitly teach content. Rather they capture students' attention, stimulate thinking, help students ac-

TABLE 1

Trade book features and literacy strategies aligned to the 5E Instructional Model.

5E PHASE	PHASE SUMMARY (BYBEE 2014)	TRADE BOOK FEATURES	LITERACY STRATEGIES
Engage	Brief activity related to the content or practices included in the lesson objective that captures students' attention and interest	• Launches a story of scientific discovery • Introduces a problem, question, event, or riddle • Presents a captivating picture or poem that elicits prior knowledge or sparks discussion	• Picture Walk • Book Talk • First Line • Read-Aloud
Explore	Concrete, hands-on experiences that provide time for students to formulate explanations, investigate phenomena, observe patterns, and clarify understanding	• Structures opportunities for parallel reading and hands-on observation • Provides clear instructions for science experiments and activities, including safety tips.	• Interactive Read Aloud—pause at predetermined points and complete a hands-on activity (repeat)
Explain	Synthesis of students' explanations and experiences with direct-instruction of key scientific or technological concepts and academic vocabulary	• Describes or explains a scientific concept • Uses academic vocabulary and contains accurate illustrations • Supports interpretation of observations, as with field guides • Typically nonfiction	• Informational Text • Interactive Read-Aloud—pause at predetermined points and discuss key concepts related to Explore (repeat)
Elaborate	Learning experiences that extend, expand, and enrich the concepts and practices developed in the prior phases and facilitate transfer to related, but new, real-world situations	• Applies a scientific concept in a real-world setting • Presents a challenge requiring students to apply a scientific concept or ability • Biographies	• Claim, Evidence, and Reasoning statements • Open Mind Portraits • Readers Theater
Evaluate	Assessment of student knowledge of science concepts and practices included in the lesson objective	• Contains errors, misconceptions, or exaggerations in the text or illustrations • Reviews patterns across a scientific concept • Includes breaks between the questions posed in the text and the answers provided	• Students identify and correct errors or exaggerations in the text and/or illustrations • Two truths and a lie • Interactive Read-Aloud—pause at predetermined points and have students complete an idea, answer questions, or make predictions (repeat)

Ten Tips for Reading Aloud

1. Preview the Book
2. Set the Stage
3. Celebrate the Author and Illustrator
4. Read with Expression
5. Share the Pictures
6. Encourage Interaction
7. Keep the Flow
8. Model Reading Strategies
9. Don't Put it Away
10. Have Fun!

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Handouts

https://eiu.edu/~reading/docu.html