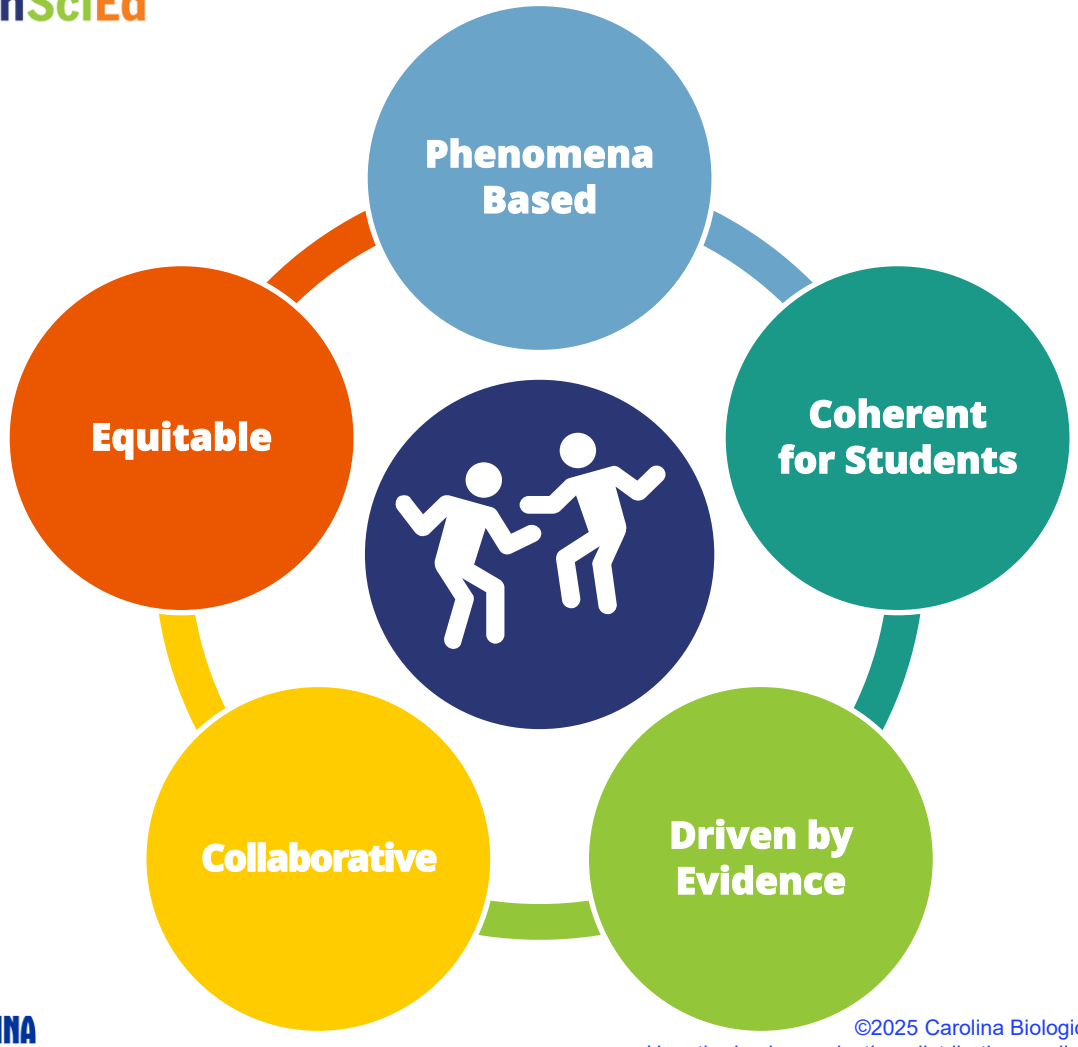
CAROLINA
UNLEASH LEARNING™

CAROLINA® + OpenSciEd®

Carolina's Certified Version of OpenSciEd® Elementary School

High-Quality Instructional Materials Just Got Even Better.

Designed and Built with Students Front and Center



- Exploration is driven by **students'** questions and ideas
- Builds on **students'** prior knowledge and experiences
- **Students** use evidence to revise their thinking
- **Students** figure out ideas as a classroom community

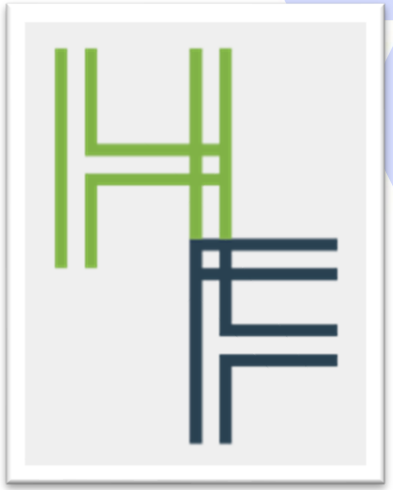
Transforming Science Education

Funded by Renowned Philanthropic Organizations

Bill & Melinda Gates Foundation

Carnegie Corporation of New York

Charles and Lynn Schusterman Family Foundation



William and Flora Hewlett Foundation

Developed by Leading Education and Research Institutions

BSCS Science Learning Team

Dana Center Team

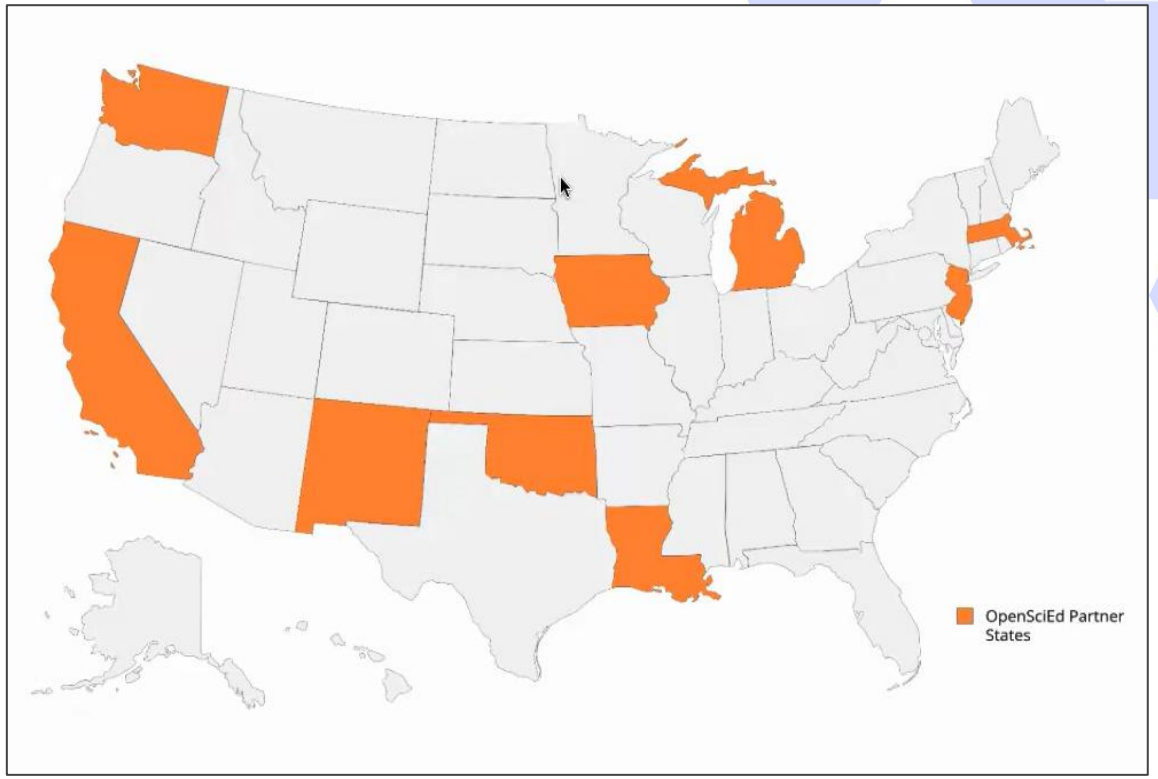
Northwestern University Team

University of Colorado Boulder Team

Boston College Team

Field Test

- 9 partner states
- Field tested by 450+ teachers and about 10,000 students



Instructional Model

Units are built following the Storyline Instructional Model

- Engages students in asking questions about phenomena
- Student questions drive the unit learning

Lessons are all connected

- Designed to help students make sense of phenomena
- Sensemaking through investigations and research

Pathways to Adoption

OPEN EDUCATIONAL RESOURCE (OER)

Download the learning materials freely

OpenSciEd CERTIFIED CAROLINA® VERSION

OpenSciEd Elementary Instructional Model

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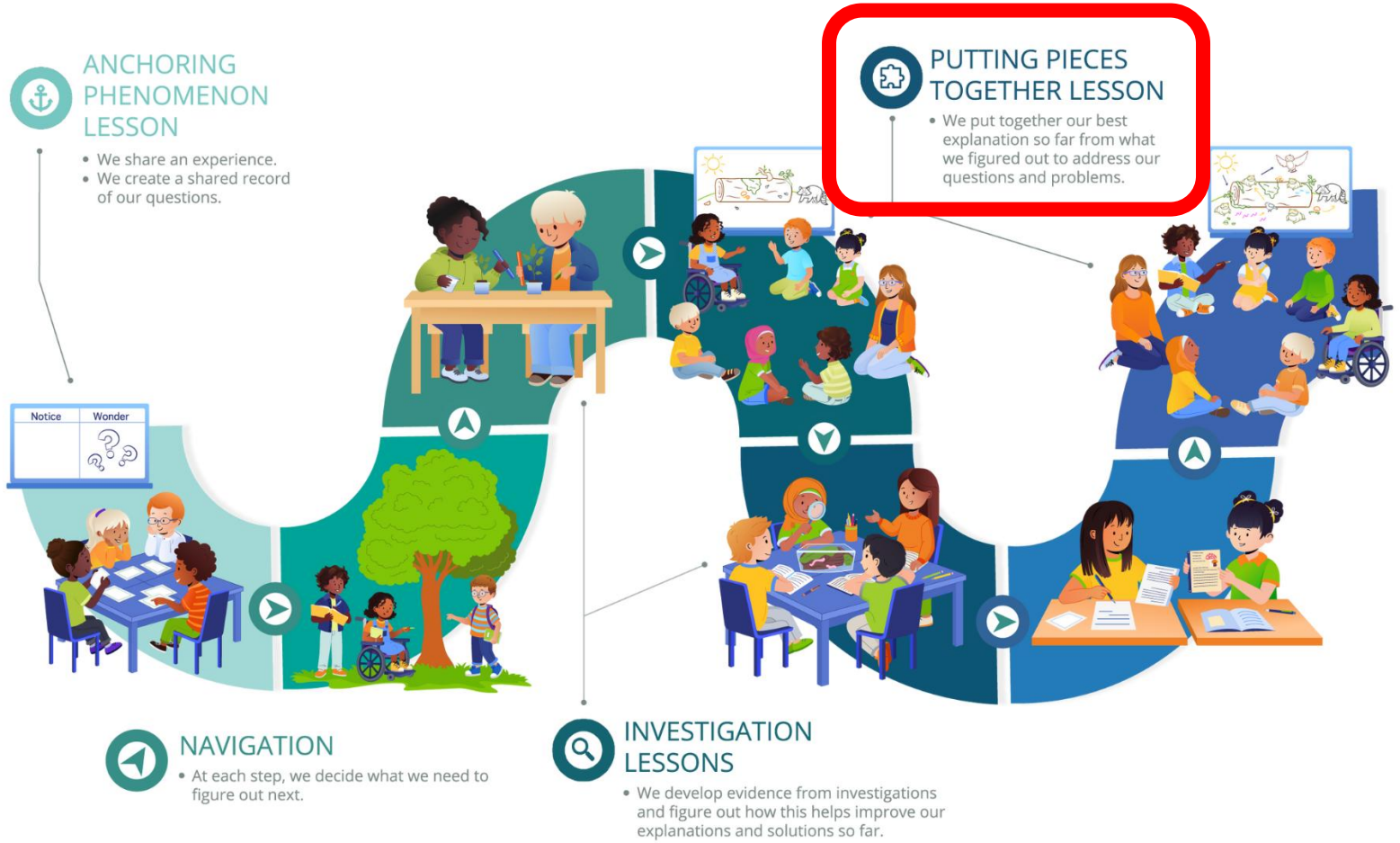


OpenSciEd Elementary Approach

- Units anchor the science in the interests and experiences of children, their families, and communities.
- Students see how the science they figure out connects to the questions and problems their class has identified.
- Students partner with each other and with their teacher to *figure out how* to *investigate their questions*, *make sense* of data, and *develop explanations and models*, step by step.

Science that Engages ALL Children

The OpenSciEd curriculum is designed to:

- Include the voices of students and teachers from a broad range of backgrounds.
- Connect the science that students figure out to their interests and lived experiences.
- Offer opportunities for students to authentically use their existing communicative resources to engage with the phenomena, ensuring everyone feels included and has their strengths used to drive learning forward.
- Cultivate a classroom environment that fosters respect and agency for every student.

CAROLINA UNLEASH LEARNING

OpenSciEd

Instructional Elements

Phenomena Based

Centered around figuring out phenomena or solving problems

Coherent for Students

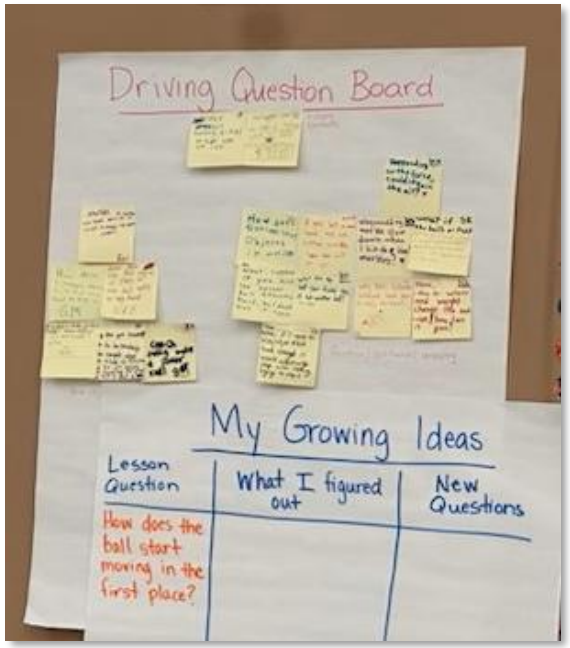
Driven by students' questions and ideas

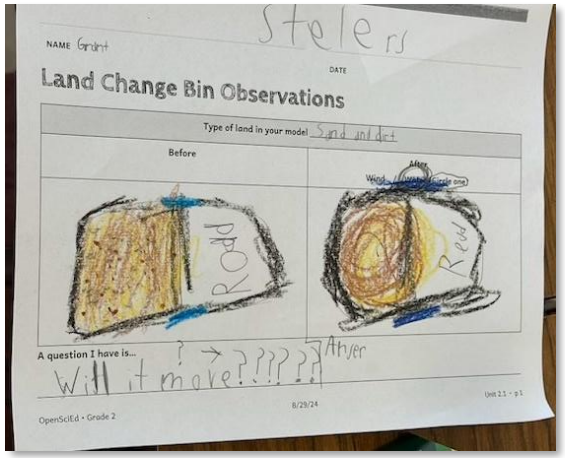
Driven by Evidence

Incremental building and revision of ideas based on evidence

Collaborative

WE figure out ideas together





Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
K.1 Energy: Sunlight K-PS3-1, K-PS3-2, K-2-ETS1-1, K-2-ETS1-2	**1.1 Waves: Light** 1-PS4-2, 1-PS4-3	**2.1 Earth: Land Changing Shape** 2-ESS1-1, 2-ESS2-1, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3	**3.1 Forces & Interactions** 3-PS2-1, 3-PS2-2, 3-PS2-3, 3-PS2-4, 3-5-ETS1-1, 3-5-ETS1-3	**4.1 Energy Transfer: Collisions** 4-PS3-1, 4-PS3-3	**5.1 Ecosystems & Matter Cycling** 5-PS1-1, 5-PS3-1, 5-LS1-1, 5-LS2-1
K.2 Weather K-ESS2-1, K-ESS3-2	**1.2 Waves: Sound** 1-PS4-1, 1-PS4-4, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3	**2.2 Structure & Properties of Matter** 2-PS1-1, 2-PS1-2, 2-PS1-3, 2-PS1-4, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3	**3.2 Weather & Hazards** 3-ESS2-1, 3-ESS2-2, 3-ESS3-1, 3-5-ETS1-2	**4.2 Energy Transfer: Electricity** 4-PS3-2, 4-PS3-4, 4-PS4-3, 4-ESS3-1, 3-5-ETS1-1, 3-5-ETS1-3	**5.2 Matter Properties** 5-PS1-2, 5-PS1-3, 5-PS1-4, 3-5-ETS1-1, 3-5-ETS1-3
K.3 Forces & Motion K-PS2-1, K-PS2-2, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3	**1.3 Space: Sky Patterns** 1-ESS1-1, 1-ESS1-2	**2.3 Habitats & Biodiversity** 2-LS4-1, 2-ESS2-2, 2-ESS2-3	**3.3 Trait Variations** 3-LS1-1, 3-LS3-1, 3-LS3-2, 3-LS4-1, 3-LS4-2	**4.3 Earth Processes** 4-PS4-1, 4-ESS1-1, 4-ESS2-1, 4-ESS2-2, 4-ESS3-2, 3-5-ETS1-2	**5.3 Earth Systems** 5-ESS2-1, 5-ESS2-2, 5-ESS3-1, 3-5-ETS1-2
K.4 Ecosystems K-LS1-1, K-ESS2-2, K-ESS3-1, K-ESS3-3	**1.4 Animal & Plant Traits** 1-LS1-1, 1-LS1-2, 1-LS3-1, K-2-ETS1-1, K-2-ETS1-2	**2.4 Plants** 2-LS2-1, 2-LS2-2	**3.4 Ecosystem Change & Survival** 3-LS2-1, 3-LS4-3, 3-LS4-4, 3-5-ETS1-2	**4.4 Structure & Function** 4-LS1-1, 4-LS1-2, 4-PS4-2	**5.4 Earth in the Universe** 5-ESS1-1, 5-ESS1-2, 5-PS2-1

Updated 7/29/2024

Connect to Our Experiences

Think about times when you or someone you were watching was playing with a round object like a ball or puck.

Turn and tell a partner:

- Where were you/they playing?
- How was the ball or puck moving from place to place?
- What did you see, hear, or feel?

Share your ideas with the class.

Soccer ball

Photo by Giero Saaskilahti on Unsplash

Hockey puck

Photo by soerli via Pixabay

TG
Pg 7

CONNECT

Purpose: Invite all students to participate in an Initial Ideas Discussion to share their ideas, stories, and experiences so they see that the work we do in science connects with our lives inside and outside the classroom.

1. Connect to our experiences. [15 min]

Turn and talk about our experiences. Display **slide A**. Tell students about a time you were watching a soccer game, and that you were interested in how the ball moved so quickly around the field. Ask students to think about a time when they or someone they were watching was playing with a round object, like a ball or puck.

Direct students to use the questions on the slide to turn and talk to a partner about what they or this person was doing with the ball or puck.

Prompts to use	Ideas to look and listen for
Where were you/they playing?	*I was playing baseball on the playground.* *I was kicking a soccer ball at a game.* *I was playing hockey at the ice rink.*
How was the ball or puck moving from place to place?	*I used my stick to hit the puck.* *I used my foot to kick the ball.* *I threw the ball with my hand.*
What did you see, hear, or feel?	*I heard the ball hit the bat.* *I heard and felt the ball hit my glove.* *I saw the puck move across the ice.*

Community Connections

If you have not yet done so, use the Establishing Classroom Agreements teacher reference to build classroom agreements for how we figure things out in science before engaging in the next component of this lesson. Establishing agreements for your classroom community now will allow students to practice them during the upcoming discussion. If you have already established classroom agreements for science, take this opportunity to review them with the class and add examples of how the agreements look, sound, and feel in our class.

Broadening Access

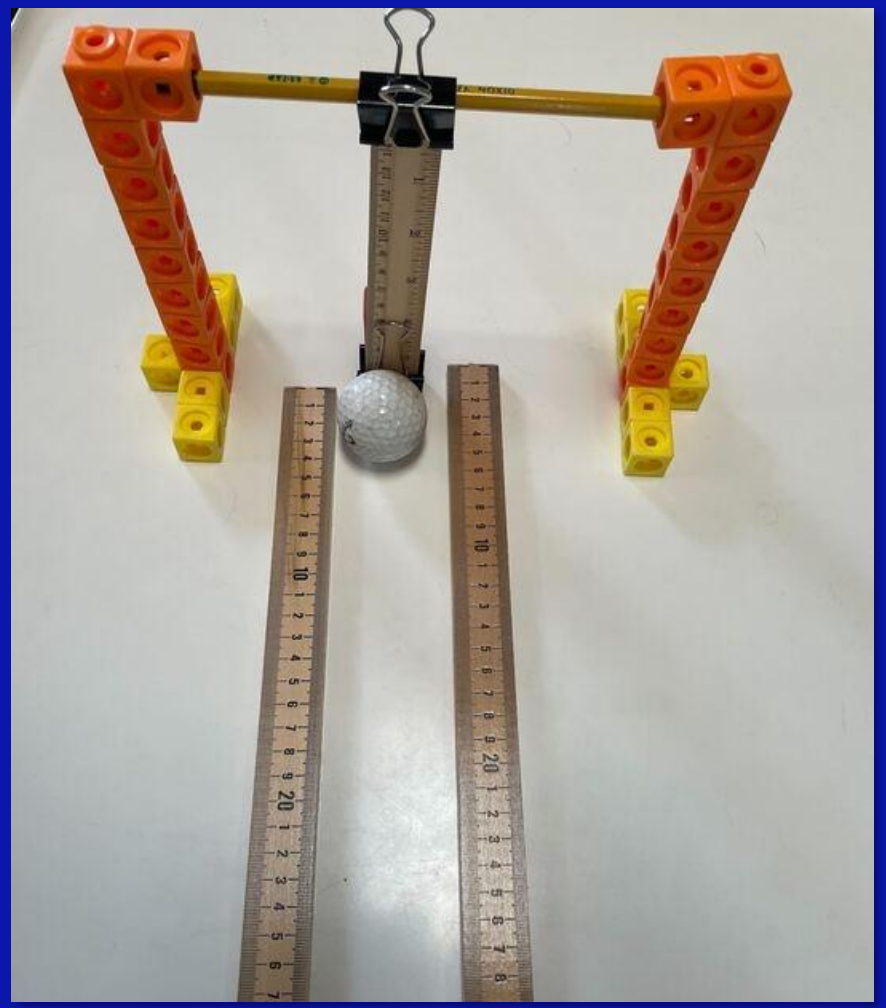
This Initial Ideas Discussion provides an authentic opportunity for you to enhance students' language learning and language use for sensemaking work. You might find it helpful to use the Discussion Type Prompts teacher reference during the discussion. This handout provides teacher prompts that you could use to elicit and elevate students' ideas around the changing motion of objects.

Make Observations

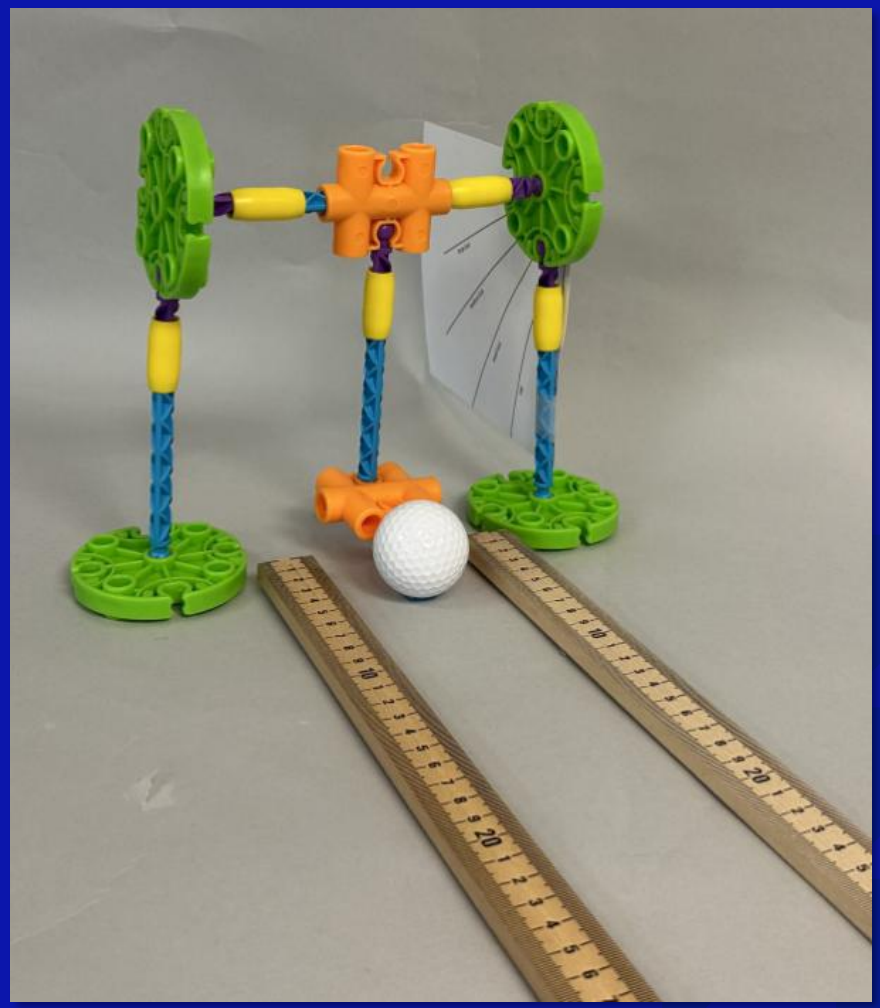
Follow these directions to start exploring how a soccer ball moves:

1. Kick a soccer ball back and forth between you and a classmate or two. Be sure to keep the ball on the floor or ground when you kick it.
2. Each time you kick, back up so you put more distance between you and your classmate(s). Even as you get farther away, keep the ball on the ground when you kick it.
3. As you kick back and forth, observe what you see, what you hear, and what you feel about the soccer ball's motion.

Original Resources



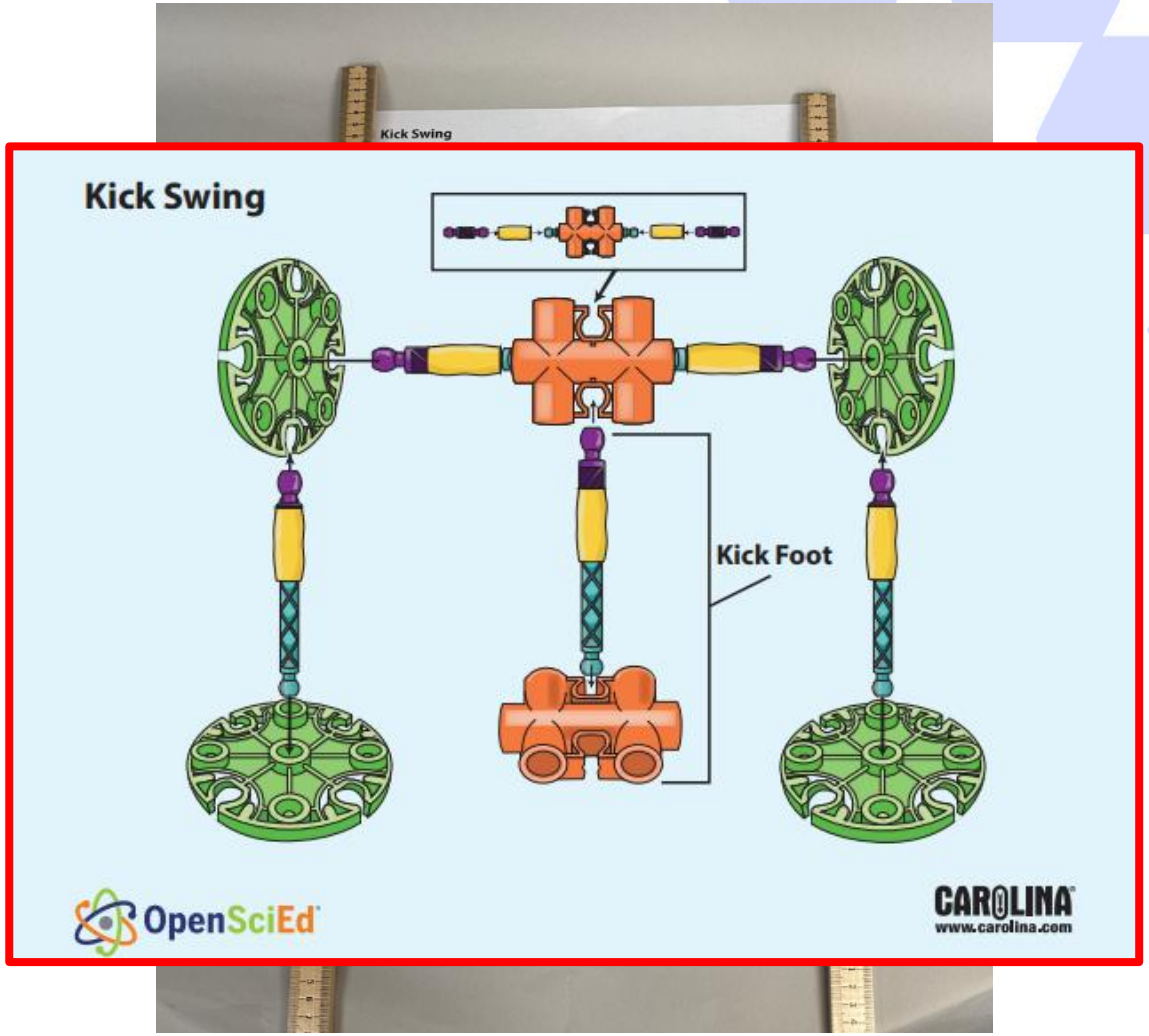
Carolina Resources



Carry Out an Investigation

Here are the materials we have to conduct our investigation:

- One ball (ping pong, golf, or foam ball)
- Four blue rods
- Five purple rods
- Five yellow connectors
- Four green round connectors
- Two orange connectors
- Two meter sticks
- Kick Swing Card

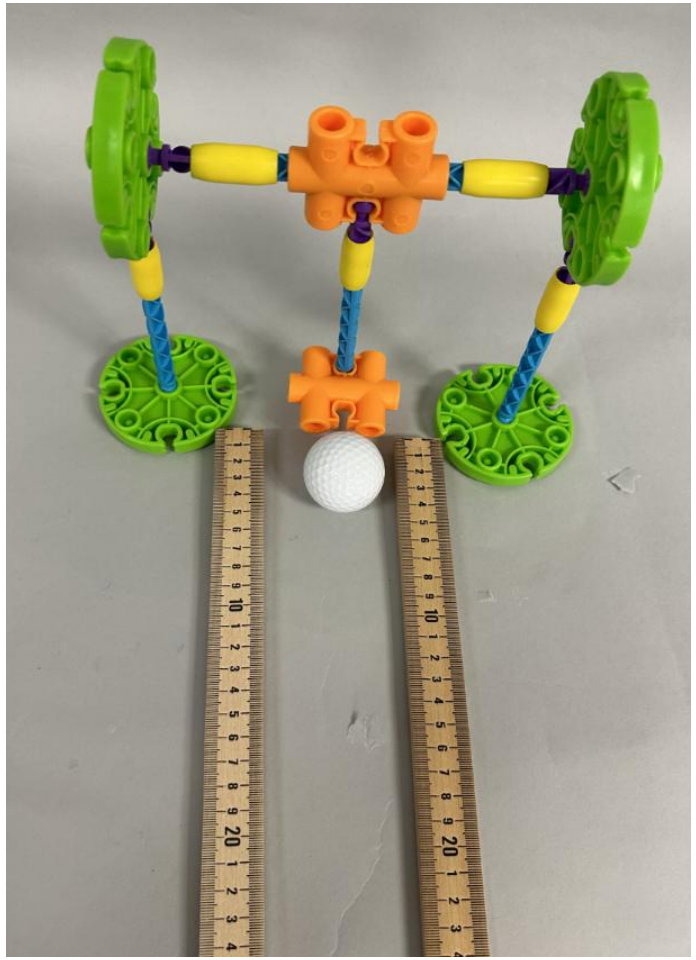


Carry Out an Investigation

Work with your group to carry out an investigation to answer the question, “How does the size of a kick change the motion of a ball?”

You will have about 10 minutes to investigate.

Be ready to share your results with the class.



Carry Out an Investigation

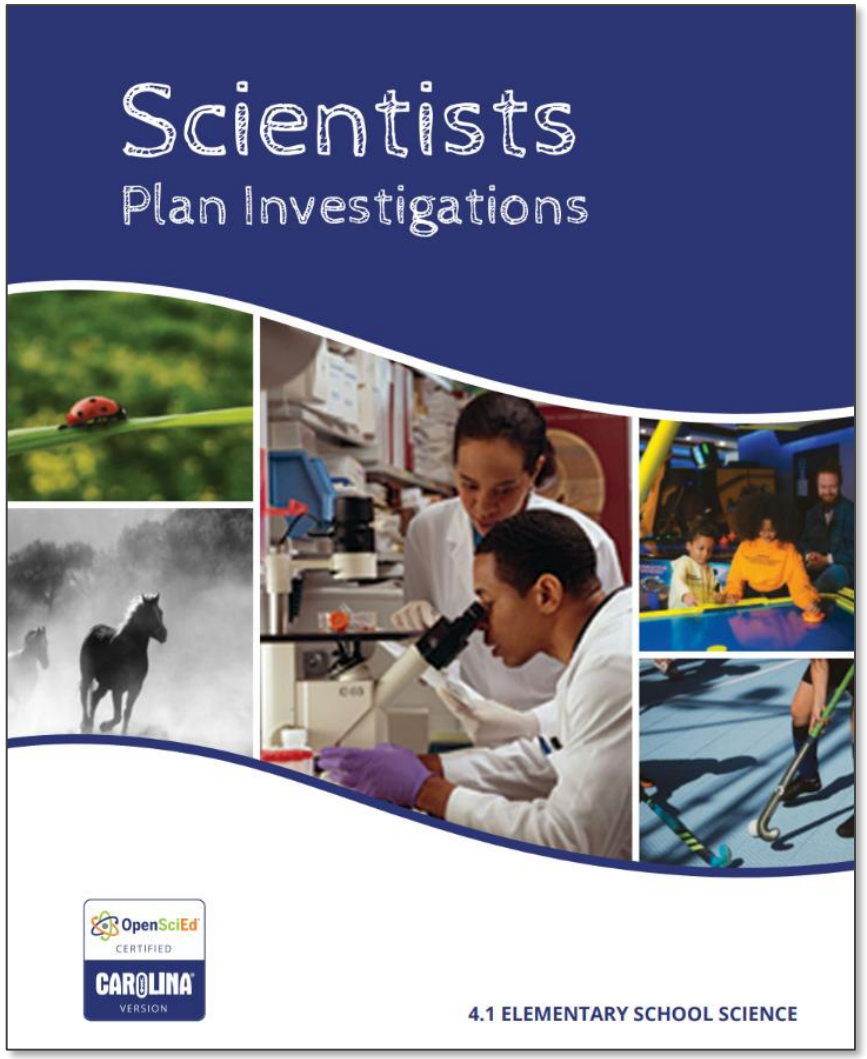
1. How did your investigation go?
2. Did you collect any data?
3. Why could it be a problem if we all did something different?
4. Can we trust our results if everyone does something different? Why or why not?
5. Why would it be helpful if we all did our investigation the same way?

Plan an Investigation

1. What investigations in science have you completed this year or last year?
2. How did you know what to do?
3. How could we gather information to help us create a better investigation?

Gather Evidence from Text

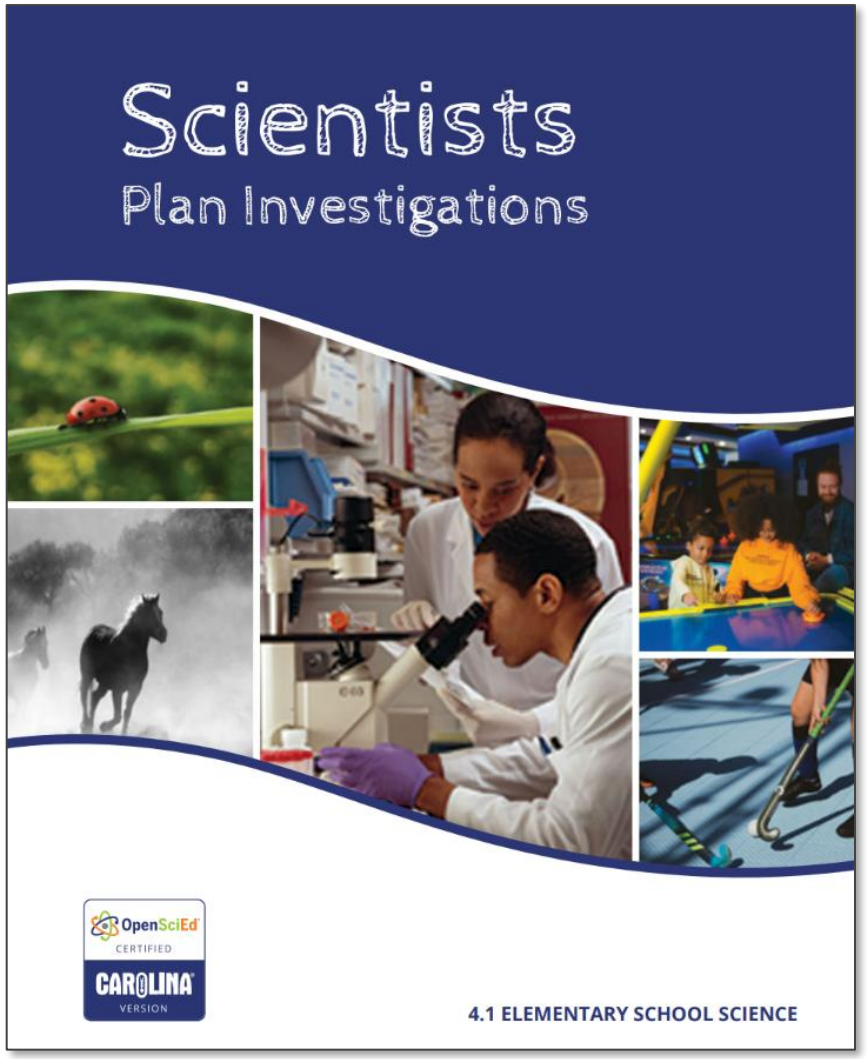
Let's read about scientists who plan and carry out investigations about motion!



Gather Evidence from Text

What do scientists have to think about to make sure they have planned a good investigation?

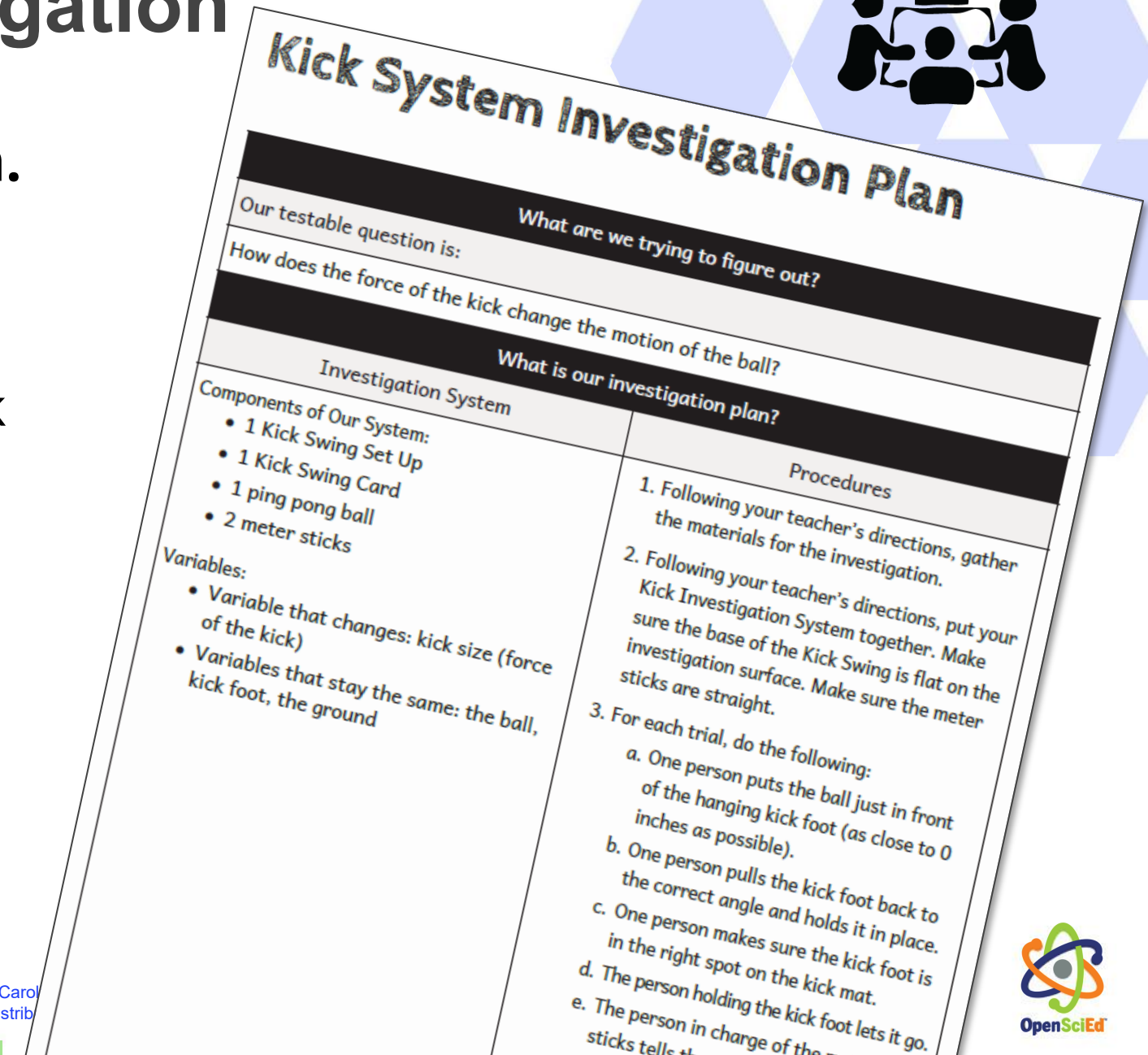
What do we need to do differently based on the evidence we gathered from our text?



Carry Out Our Investigation

Follow our investigation plan.

1. Work together to collect data for each kick size.
2. Record your data on your Kick System Investigation Data handout.



Kick System Investigation Plan

What are we trying to figure out?	
Our testable question is: How does the force of the kick change the motion of the ball?	
What is our investigation plan?	
Investigation System	Procedures
Components of Our System: • 1 Kick Swing Set Up • 1 Kick Swing Card • 1 ping pong ball • 2 meter sticks Variables: • Variable that changes: kick size (force of the kick) • Variables that stay the same: the ball, kick foot, the ground	1. Following your teacher's directions, gather the materials for the investigation. 2. Following your teacher's directions, put your Kick Investigation System together. Make sure the base of the Kick Swing is flat on the investigation surface. Make sure the meter sticks are straight. 3. For each trial, do the following: a. One person puts the ball just in front of the hanging kick foot (as close to 0 inches as possible). b. One person pulls the kick foot back to the correct angle and holds it in place. c. One person makes sure the kick foot is in the right spot on the kick mat. d. The person holding the kick foot lets it go. e. The person in charge of the sticks tells th

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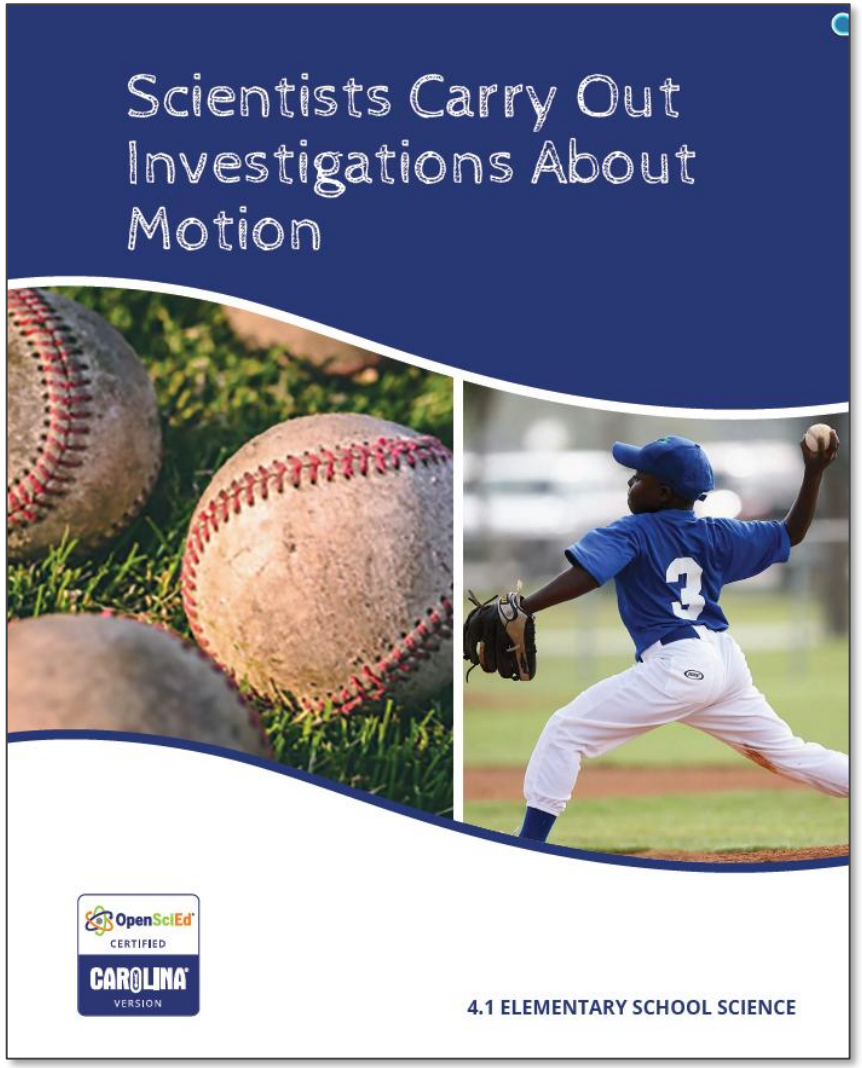
Read a Book

How will reading about the work of scientists help us analyze our data?

What should we listen for as we read our book together?



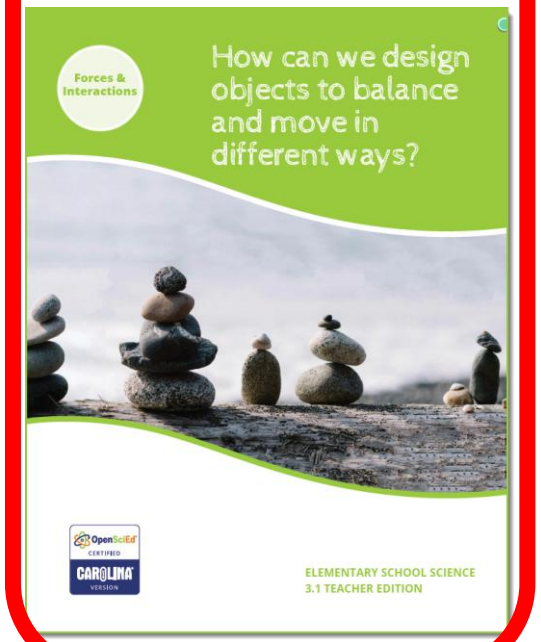
Enhanced Kits and Materials

EQUIPMENT KITS

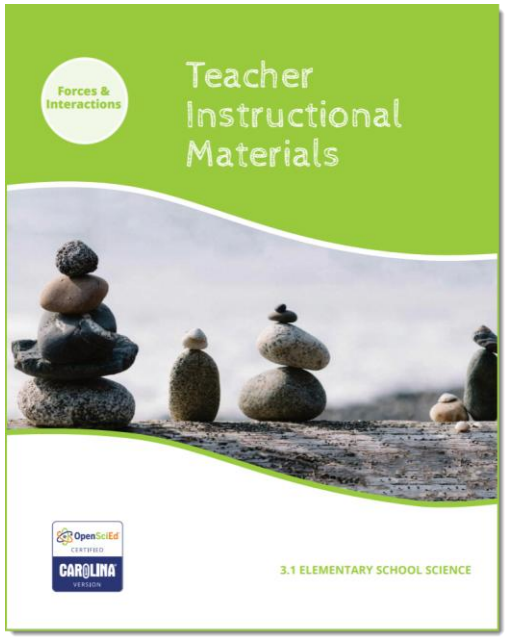
- Kits include all **consumable and non-consumable** materials for **8 lab groups** per class to allow for maximum student participation
- Kits are available in two configurations
  - **1-class** for up to 32 students
  - **5-classes** for up to 160 students
- Kits are easily refurbished with 1-class or 5-class refurbishment sets
  - Prepaid vouchers are available for future refurbishments

Kits are packed and shipped in durable, stackable totes and cardboard boxes.

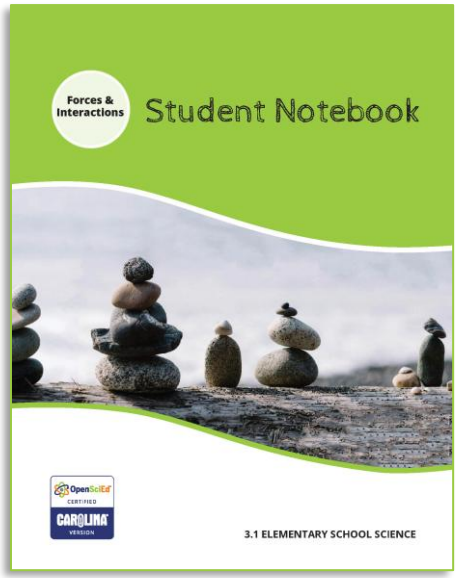
Teacher Edition



Teacher Instructional Materials

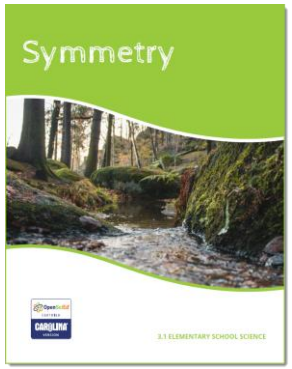


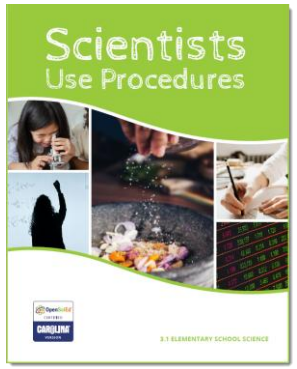
Student Notebook

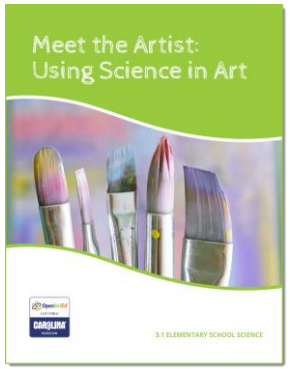


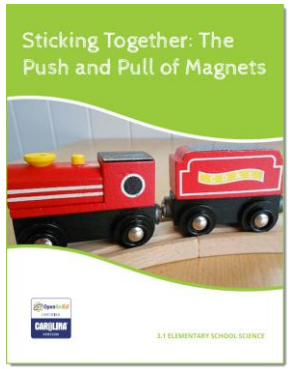
Science Kits

Student Readers









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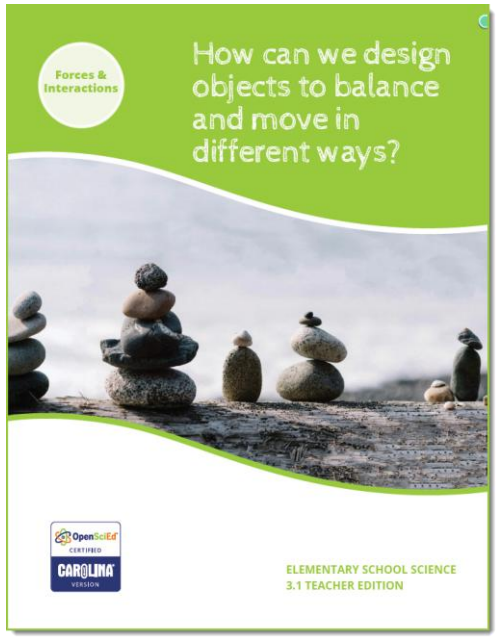
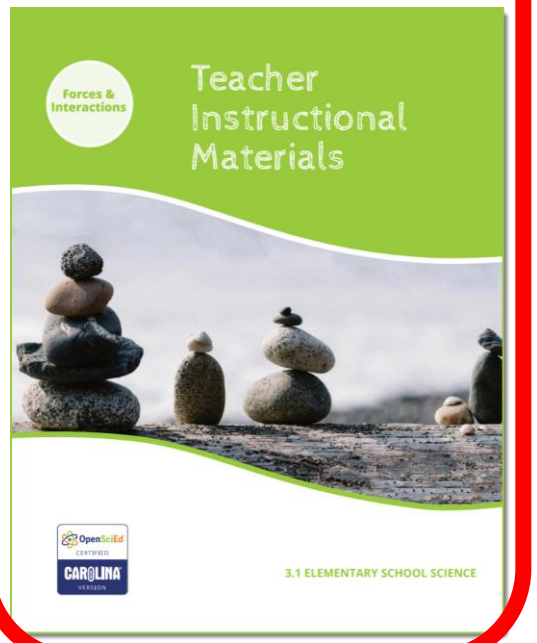
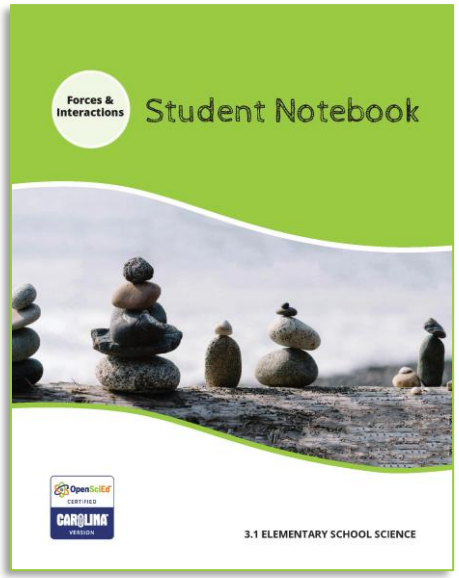
Teacher Edition



Teacher Instructional Materials

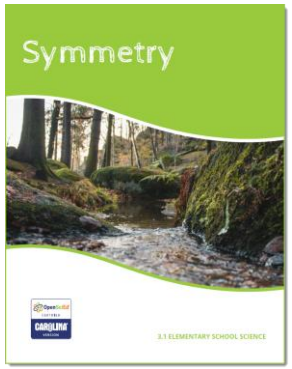


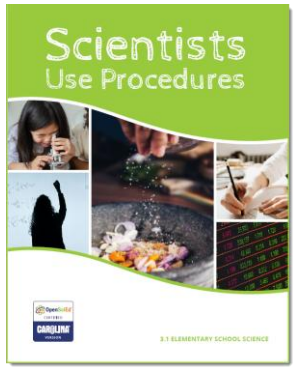
Student Notebook

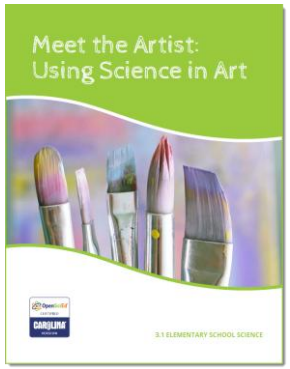


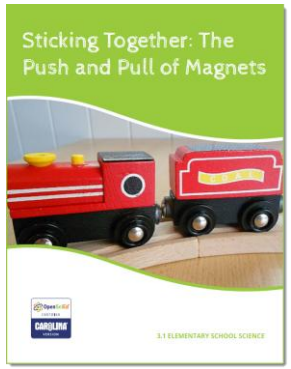
Science Kits

Student Readers









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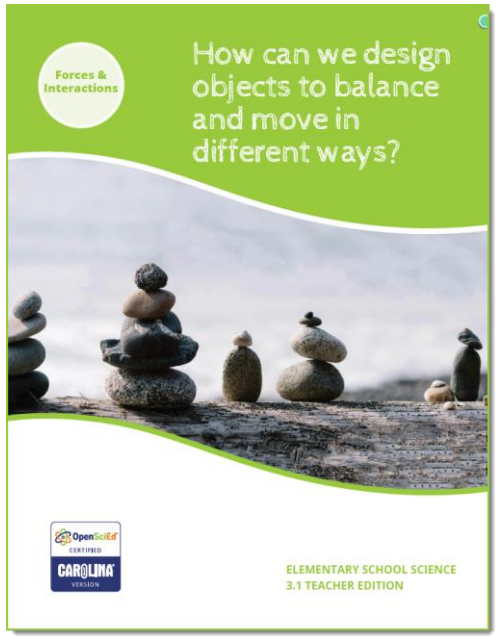

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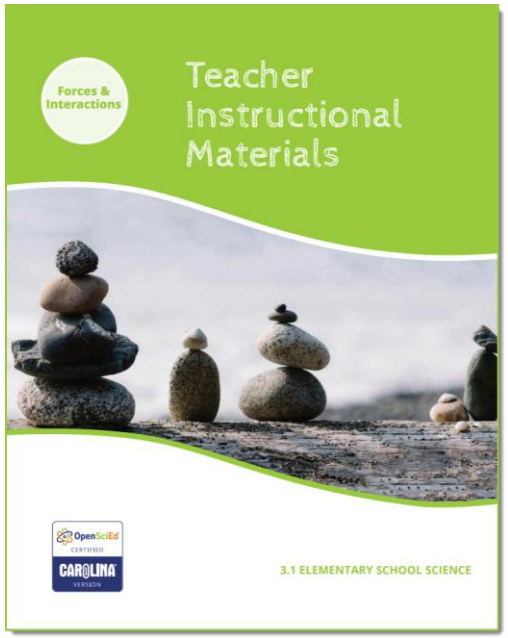

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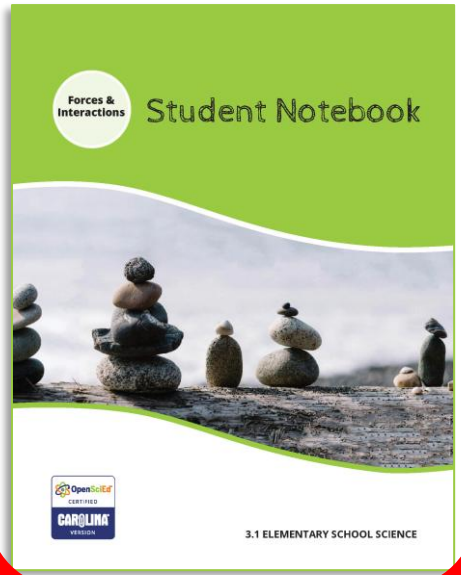

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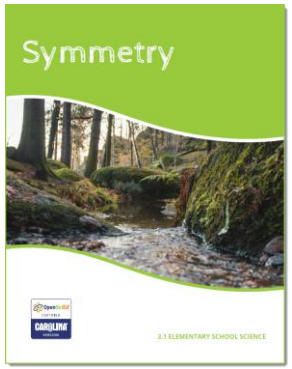

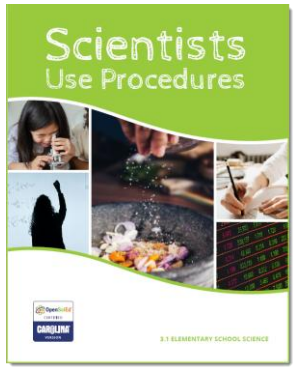

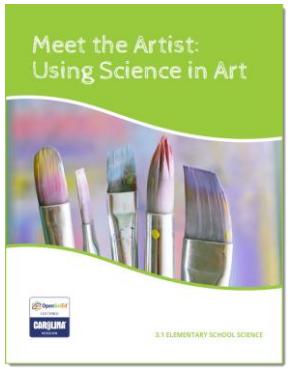

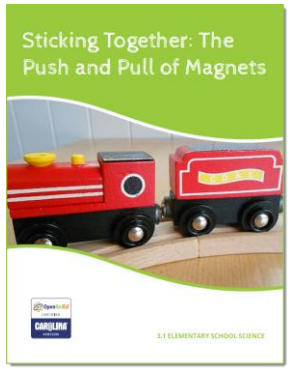

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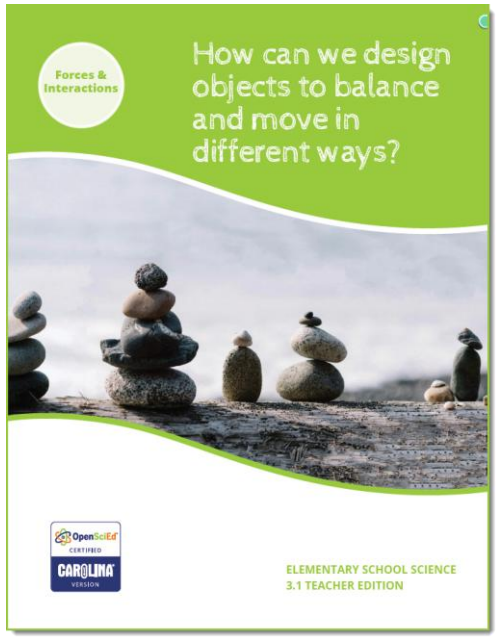

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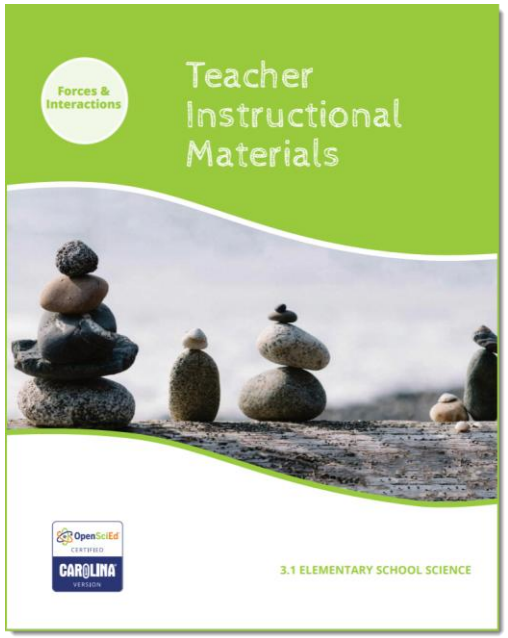

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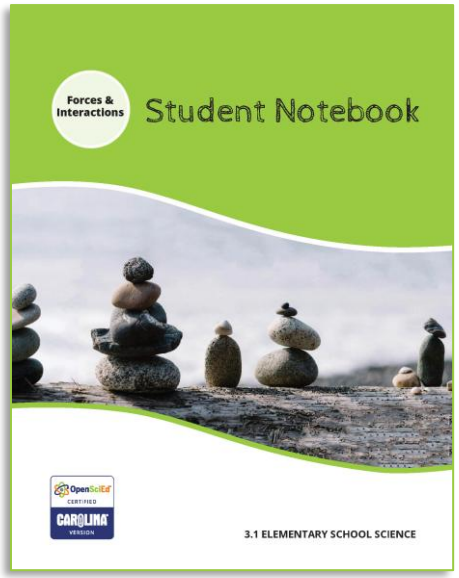
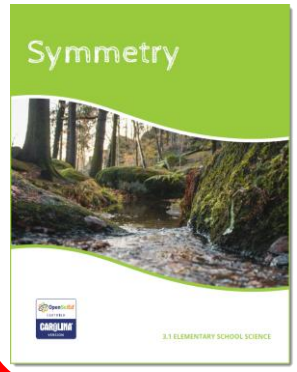
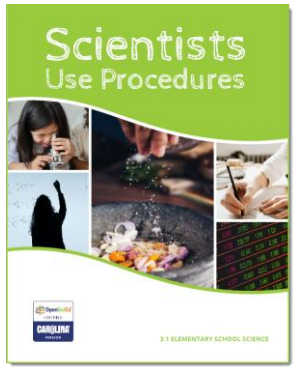
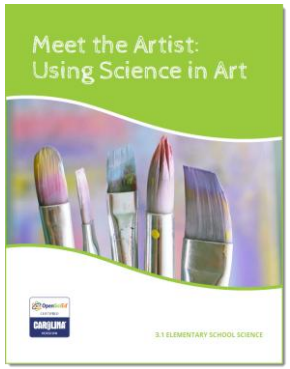


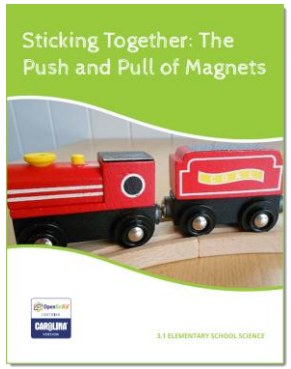
Science Kits

Student Readers









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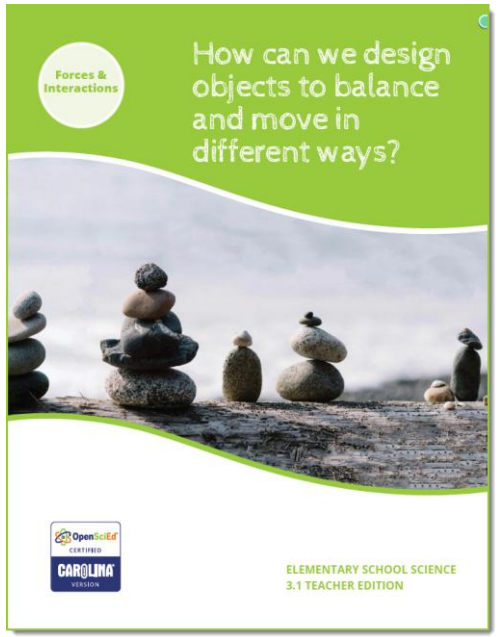
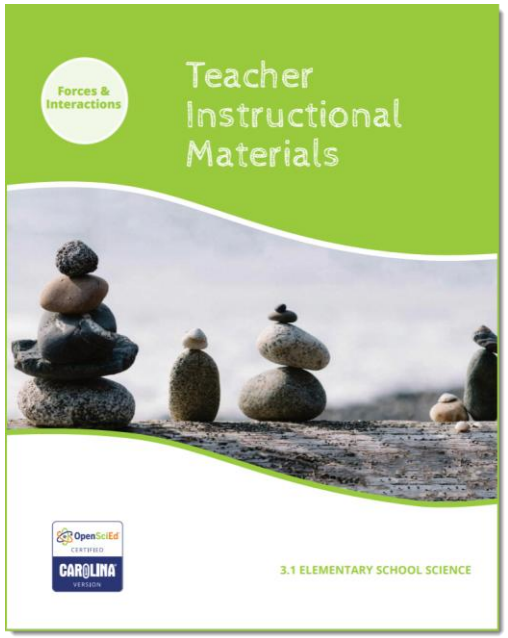
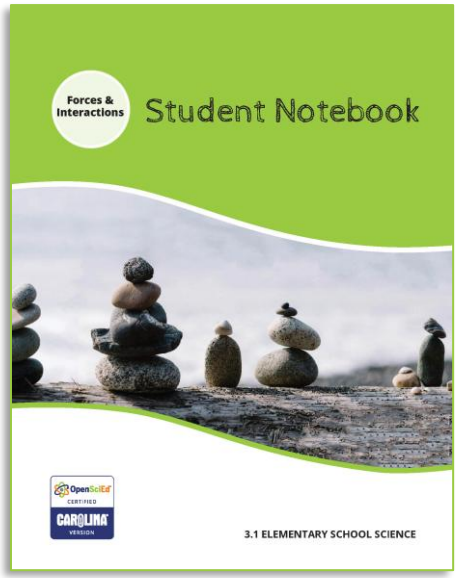


Teacher Instructional Materials

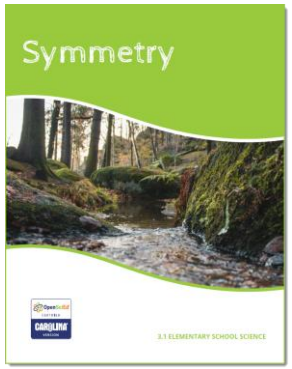


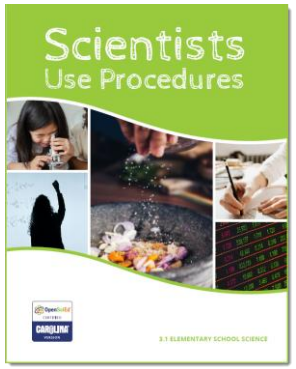
Student Notebook

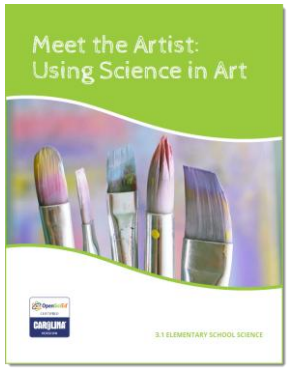


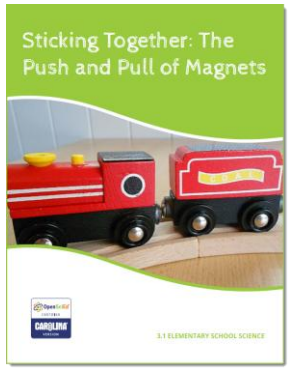
Science Kits

Student Readers









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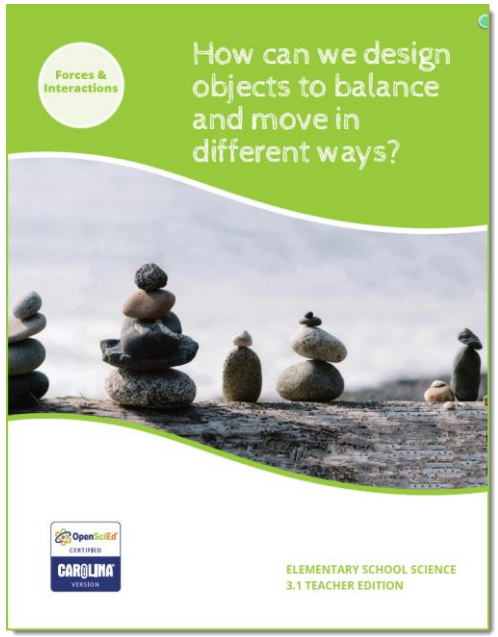
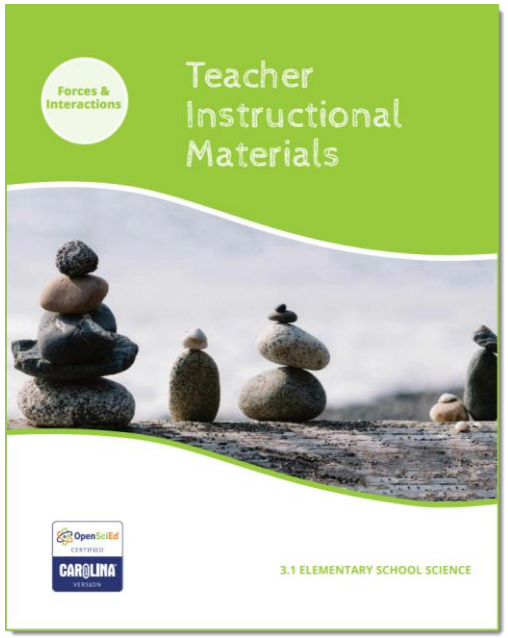
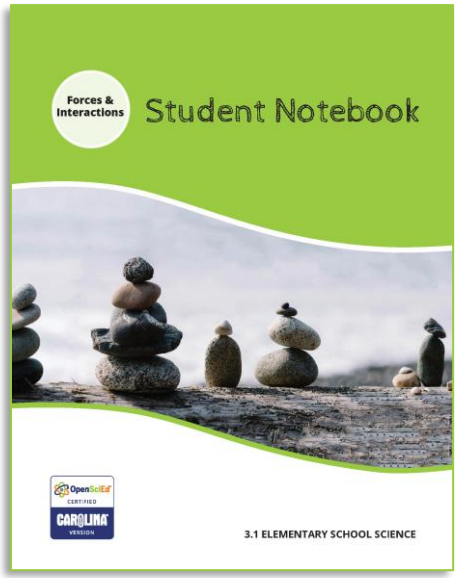


Teacher Instructional Materials

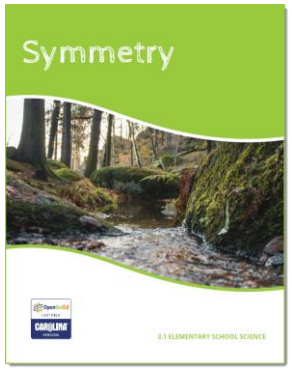


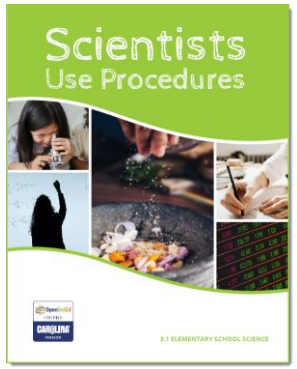
Student Notebook

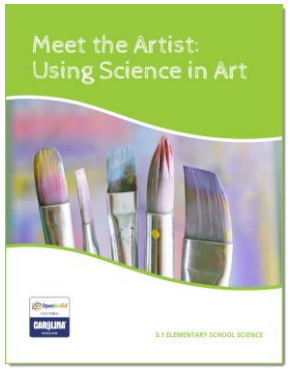


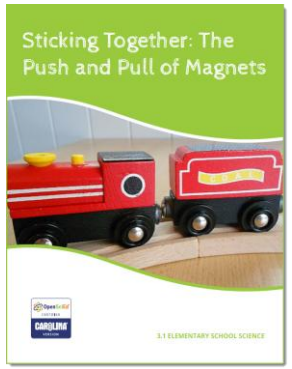
Science Kits

Student Readers









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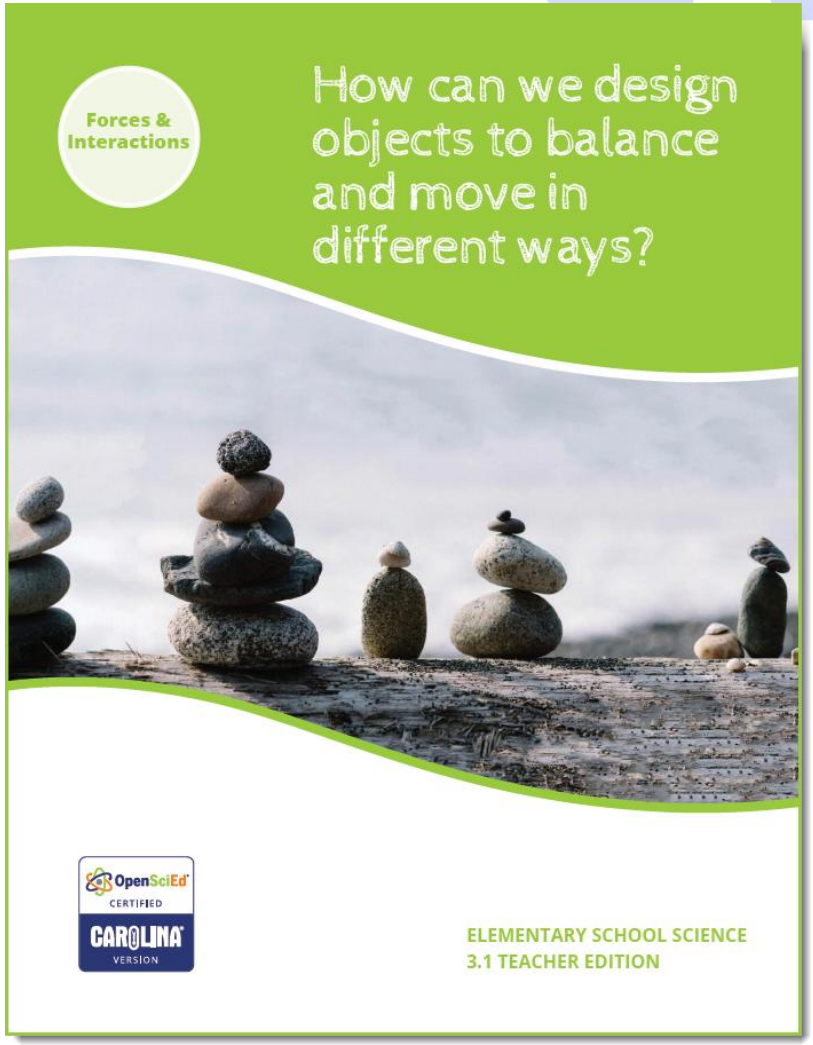
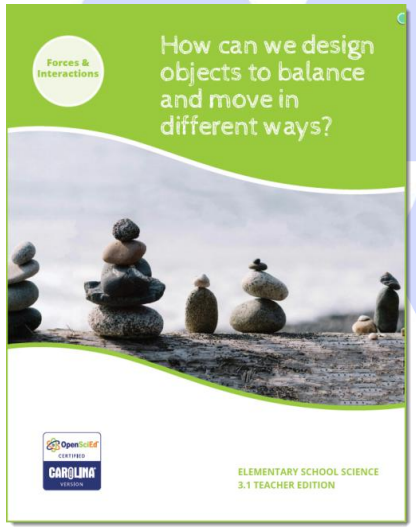
Redesigned Teacher Guide



Program Structure



- Four units per grade level
- Lessons are designed as a sequence of smaller components to meet the scheduling needs of teachers.
  - Grades K–2: *Ten 60-minute lessons per unit*
  - Grades 3–5: *Fifteen 90-minute lessons per unit*

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