

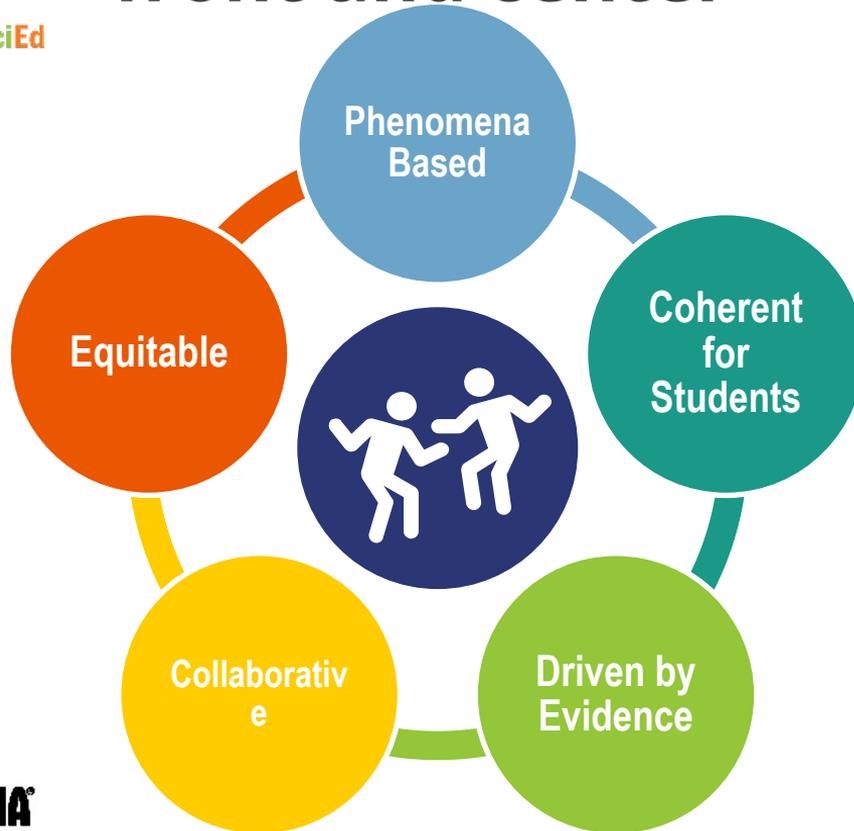


CAROLINA[®]

Transforming Science Education, Together



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 classroom community

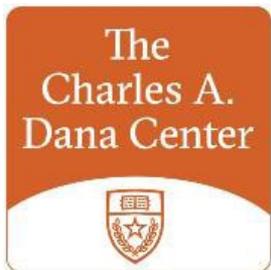




Developed by leading education and research institutions



BSCS Science Learning Team



Dana Center Team



NextGen Science Storylines
Northwestern University Team



University of Colorado Boulder
University of Colorado Boulder Team



Boston College Team





Field tested by teachers and students across the country

OpenSciEd Teachers & Students

265 field test teachers
and
5800 participating students
in
115 school districts
in
10 states

teach the OpenSciEd units and provide feedback.

The 10 OpenSciEd Partner States





OpenSciEd

How OpenSciEd Materials Rank

All units reviewed by the Science Peer Review Panel at NextGenScience using the EQuIP Rubric

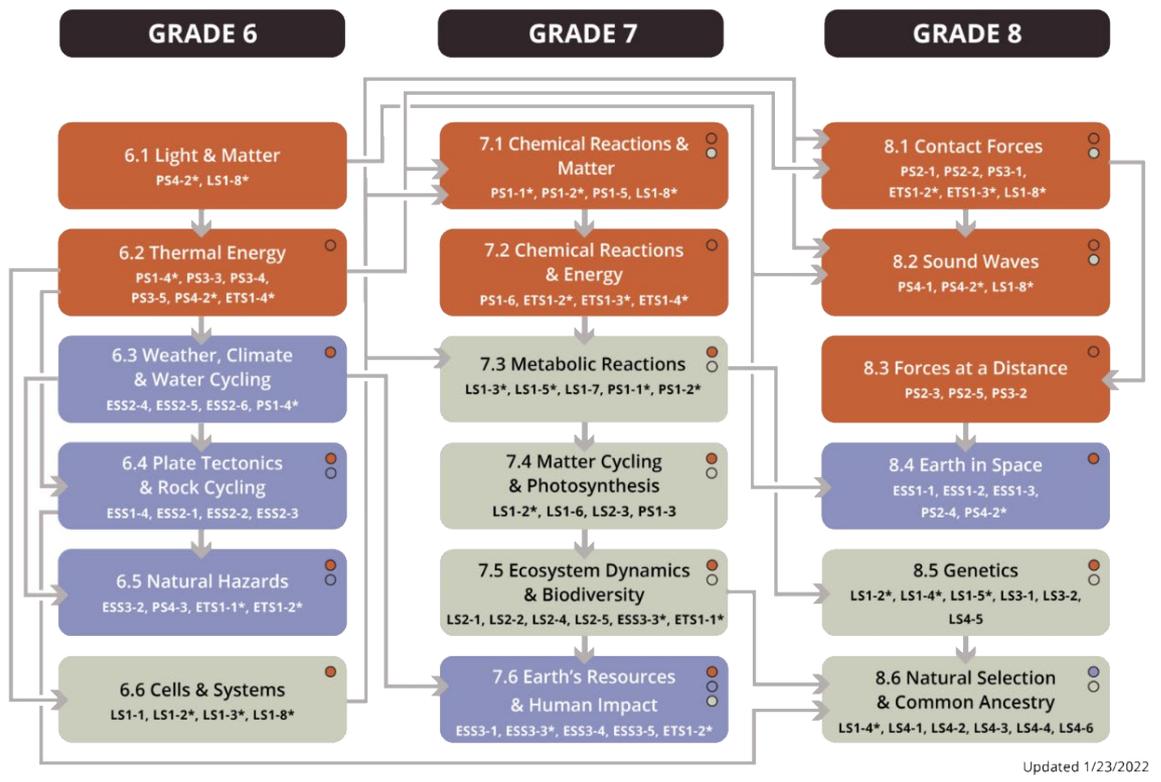
- **ALL of the units are rated Quality Examples of Science Lessons and Units**
- **16 units received the High Quality NGSS Design Badge ranking**
- **93% of materials submitted for review do not achieve a quality rating**





OpenSciEd

Middle School Scope & Sequence



Unit Emphasis

- PHYSICAL SCIENCE PES
- EARTH AND SPACE SCIENCE PES
- LIFE SCIENCE PES

*PE builds across multiple units

Prior PES the Unit Builds on

- PRIOR PHYSICAL SCIENCE PES
- PRIOR EARTH AND SPACE SCIENCE PES
- PRIOR LIFE SCIENCE PES

Unit Connections

→



Carolina and OpenSciEd have partnered to make high-quality instructional materials even better.



High-quality instructional content from OpenSciEd



Materials and production expertise from Carolina



Dedicated service and support from Carolina

Carolina Development Focus

Ease of Use

Redesign the Teacher Guide
Reengineer labs and materials
Add digital resources and support

Less Prep and Instruction Time

Simplify procedures with new or improved materials
Convert some labs to demo or video
Add Teacher Prep Videos

Reduce Cost of Kits

Fewer materials
Less expensive materials
Digital options

Add Safety Measures

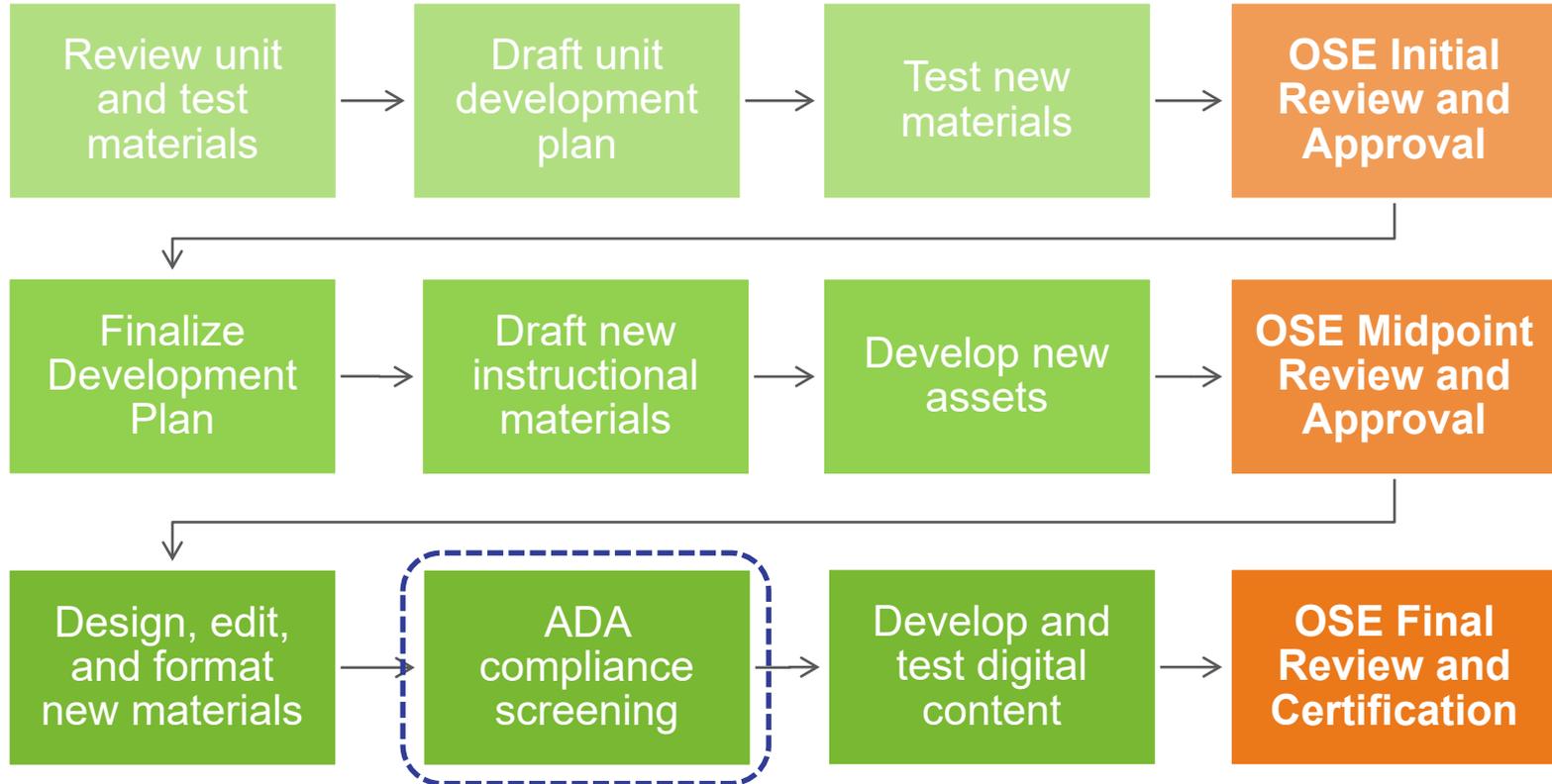
Additional Safety Guidance
Include PPE in kits
Replace and/or reduce some chemicals

Enhance Accessibility

Enhanced ADA features
Maintain UDL standards
Materials meet adoption standards

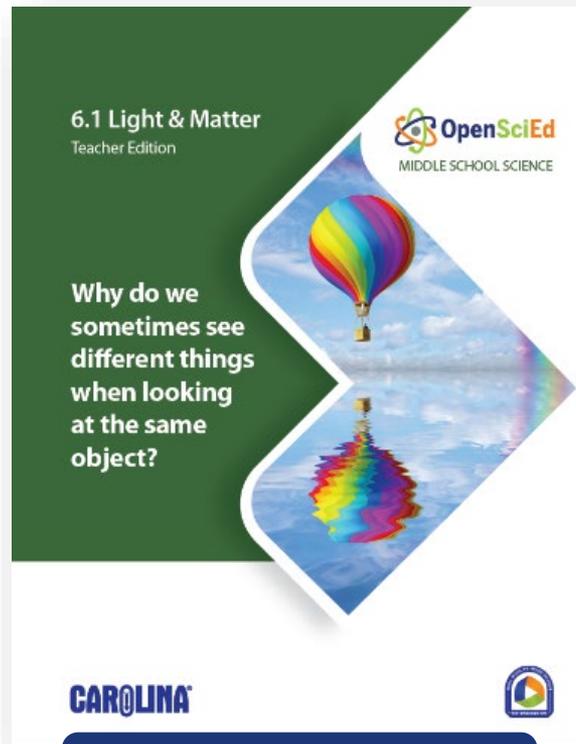


Carolina Development Plan





Redesigned Teacher Guide



Portrait layout with ADA compliant colors and fonts.



Redesigned Teacher Guide

Light & Matter

- Given the placement of this unit at the start of middle school, much of the unit is used to (1) pre-assess students' experience with asking questions and (2) reinforce what they already know from elementary grades. However, you will engage your students in most elements of asking questions during this unit, which includes the following:
- Ask questions that arise from careful observation of phenomena, models, or conceptualizations to clarify and/or seek additional information (Lesson 1)
 - Ask questions that can be investigated within the scope of the classroom, outdoors, or environment, and/or museum and other public facilities with available resources and, when appropriate, form a hypothesis based on observations and scientific principles (Lesson 2)
 - Ask questions to determine relationships between independent and dependent variables and relationships in models (Lesson 3)
 - Ask questions to clarify and/or refine a model, an explanation, or an engineering problem (Lesson 4)

These asking questions tools are provided to you, one that is used explicitly in Lesson 1. These tools are designed so that, as you pre-assess your students, you can better identify where your students need more or less support in subsequent units. These tools include the following:

- **Classroom Creating Questions (Using Classroom Tools)** Use this tool to support students in writing classroom-asked questions into open-ended ones. Applying it when students first enter questions for the CCQs. Before, use it prior to a unit to transform classroom-asked questions into open-ended ones that the class can investigate together.
- **Try to Answer (Using Classroom Tools)** Use this tool to support students in asking testable questions that include enough specific information that one could gather evidence (e.g., measure, observe, or measure the question). This tool includes testable questions that are not purely only experimental ones, but ones that can be answered by gathering original evidence.
- **Experimental Questions (Using Classroom Tools)** Use this tool to support students in asking experimental questions in which they will need to manipulate a variable in the system to observe a relationship to other variables. This is a tool designed to support students in writing experimental testable questions.

How can I support my students in Developing and Using Models?
When students engage in the modeling practices, they identify important components, relationships, and processes that work together to explain a range of related phenomena. Through the intentional use of their ideas for explaining not only the model phenomenon but a range of phenomena, we are helping students to generalize these important ideas beyond the specificity of the unit content and recognize them through their use of the explanatory power of the developed tools.

Student models are work scaffolded by starting with the explanation of the unit's anchor phenomenon, which prompts questions that will be investigated by students. Through the investigation of these questions, students figure out key parts of the underlying model. Through the putting-the-ideas-together routine, students consider how the individual pieces of the model that they've constructed can be combined together to explain the anchor phenomenon. Through this routine, we identify what aspects of the phenomenon are still needed to figure out. Thus, the development of students' models is a central practice used to organize students' learning in scientific.

In OpenSciEd units, students develop representations to help them make visible their ideas and mediate their work to explain the phenomenon. Thus, the goal is not to simply describe what is happening in the phenomenon, but to explain how and why a phenomenon occurs in it. These representations can take various forms, including diagrams, where students depict both non-visible and visible components of the phenomenon or physical models, regardless of how these models are represented, the focus of students' modeling work is the development of students' underlying ideas. Thus, the more we make students' ideas visible, the more they can be used to explain the phenomenon. In addition, it models the space for students to make thoughtful ideas that may be necessary that can be used through investigations. Thus, students' models can facilitate argumentation in students' conversations to argue for particular ideas and reach consensus.

- Below are some modelable aspects of modeling practices for the unit and the modelable questions more generally.
- Students use models not only to depict and represent, but also to do explanatory and predictive work. The latter becomes the focus in middle school as students engage more in the practice of modeling to predict and explain.
 - Students move from physical models to conceptual or diagrammatic models and improve models.
 - Students are not just identifying the limitations of models, but actually evaluating them, improving them, and thinking more about what the models can and cannot do when they model the impact.

Using physical models to investigate and test aspects of the phenomenon. Because they are not able to manipulate the real-world one-way mirror system, throughout the unit, students use physical box models to investigate and test aspects of the one-way mirror phenomenon. These box models help them more fully understand the phenomenon itself. In Lesson 1, they use the box models to observe the phenomenon firsthand. These box models, like all models, have limitations. For example, students view the phenomenon from a different perspective than from where the music student or the teacher are located within the system. In Lesson 2, they consider what would happen if parts of the real-world system changed by testing out different scenarios in the box models. They test swapping the light from Room A to Room B, putting lights in both rooms, and making both rooms dark. This helps them realize or reflect their ideas that the light differential between rooms is key in causing the phenomenon itself. In Lesson 3, they occur in how what happens when light interacts with the one-way mirror and measure the amount of light that reflects off and transmits through a one-way mirror, glass, and a regular mirror. By testing different materials, they figure out that one-way mirrors reflect and transmit about the same amount of light. Finally, in Lesson 4, students return to the box models and test ideas about manipulating the light brightness on both sides of the one-way mirror. They then test how another material, glass, can act like a one-way mirror in certain light conditions. The box models are not simply representations of the system, they are representations that students play with and manipulate that help them better understand the phenomenon and start to explain it.

Unit 6.1 TEACHER BACKGROUND KNOWLEDGE

Using physical models to investigate and test aspects of the phenomenon. Because they are not able to manipulate the real-world one-way mirror system, throughout the unit, students use physical box models to investigate and test aspects of the one-way mirror phenomenon to help them more fully understand the phenomenon itself. In Lesson 1, they use the box models to observe the phenomenon firsthand. These box models, like all models, have limitations. For example, students view the phenomenon from a different perspective than from where the music student or the teacher are located within the system. In Lesson 2, they consider what would happen if parts of the real-world system changed by testing out different scenarios in the box models. They test swapping the light from Room A to Room B, putting lights in both rooms, and making both rooms dark. This helps them realize or reflect their ideas that the light differential between rooms is key in causing the phenomenon itself. In Lesson 3, they occur in how what happens when light interacts with the one-way mirror and measure the amount of light that reflects off and transmits through a one-way mirror, glass, and a regular mirror. By testing different materials, they figure out that one-way mirrors reflect and transmit about the same amount of light. Finally, in Lesson 4, students return to the box models and test ideas about manipulating the light brightness on both sides of the one-way mirror. They then test how another material, glass, can act like a one-way mirror in certain light conditions. The box models are not simply representations of the system, they are representations that students play with and manipulate that help them better understand the phenomenon and start to explain it.



Redesigned Teacher Guide

Light & Matter

TEACHER BACKGROUND KNOWLEDGE

Lab Safety Requirements For Science Investigations

It is important to adopt and follow appropriate safety practices within the context of hands-on investigations and demonstration, whether this is in a traditional science laboratory or in the field. In this case, teachers need to be aware of any school or district safety policies, legal safety standards, and better professional practices that are applicable to hands-on science activities being undertaken.

Science safety practices in laboratories or classrooms require engineering controls and personal protective equipment, (e.g., wearing safety goggles, non-late aprons and gloves, open-toe shoes, face shield, and fire extinguisher). Science investigations should always be directly supervised by qualified adults and safety procedures should be reviewed annually prior to undertaking any hands-on activities or demonstration. Prior to each investigation, students should also be reminded specifically of the safety procedures that need to be followed. Each of the lessons within the OpenSciEd units include teacher guidelines for applicable safety procedures for setting up and running an investigation, as well as taking down, disposing, and storing materials.

Prior to the first science investigation of the year, a safety acknowledgment form for students and parents or guardians should be provided and signed. You can access a model safety acknowledgment form for middle school activities at the following location: <https://static.nsta.org/files/backgroundknowledgeform-MiddleSchool.pdf>

Disclaimer: The safety precautions of each activity are based in part on use of the specifically recommended materials and instructions, legal safety standards, and better professional safety practices. Be aware that the selection of alternative materials or procedures for these activities may jeopardize the level of safety and therefore is at the user's own risk.

Please follow these lab safety recommendations for any lesson with an investigation:

1. Wear safety goggles (specifically, indirectly vented chemical splash goggles), a non-late apron, and non-late gloves during the set-up, hands-on investigation, and take down segments of the activity.
2. Immediately wipe up any spilled water and/or granules on the floor, as this is a slip-and-fall hazard.
3. Follow your teacher guide for instructions on disposing of waste materials and/or storage of materials.
4. Secure loose clothing, remove loose jewelry, wear closed-toe shoes, and tie back long hair.
5. Wash your hands with soap and water immediately after completing the activity.
6. Never eat any food/drink in a lab activity.
7. Never taste any substance or chemical in the lab.

 Specific safety precautions are called out within the lesson using the icon and a call-out box.

Unit 6.1

TEACHER BACKGROUND KNOWLEDGE

Lab Safety Requirements For Science Investigations

It is important to adopt and follow appropriate safety practices within the context of hands-on investigations and demonstration, whether this is in a traditional science laboratory or in the field. Teachers need to be aware of any school or district safety policies, legal safety standards, and better professional practices that are applicable to hands-on science activities being undertaken.

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5. Wash your hands with soap and water immediately after completing this activity.
6. Never eat any food items used in a lab activity.
7. Never taste any substance or chemical in the lab.



SAFETY

Specific safety precautions are called out within the lesson using the icon and a call-out box.

Improved labeling Point-of-use callouts

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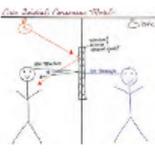
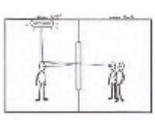


Redesigned Teacher Guide

Light & Matter

UNIT STORYLINE

Why do we sometimes see different things when looking at the same object?

Lesson/Question	Phenomena or Design Problem	What we do and figure out	1. I can represent it
LESSON 1 4 days How can something act like a mirror and a window at the same time? Anchor Phenomenon 	 A piece of material looks like a mirror from one side and a window from the other side.	We watch a curious video of a person who explains their reflection in what seems to be a mirror. The person could see the person on the other side of the mirror, but those people can see through it also a window. We wonder how something can act like a mirror and window at the same time. We investigate the phenomenon by building a model that represents it. We develop an Initial Class Conceptual Model to explain related phenomena, and develop a Driving Question Board and Light Cone Knowledge Chart. We figure out these things: <ul style="list-style-type: none"> Some materials can be reflective and see through at the same time. Whether the material is reflective or see-through may be related to what there is in it. 	
& Navigators to Next Lesson: We figure out that the light on the other side of the mirror window is likely important to whether it acts like a mirror or a window. We make predictions about how emitting the light from the window will affect the light on the other side.			
LESSON 2 4 days What happens if we change the light? Anchor Phenomenon 	 The way we mirror phenomena can happen, when there is a difference in light between the two sides of the material?	In this lesson, we observe the same way mirror material out of the room. We move the flashlight in the room. It makes both rooms get and make both rooms dark. We figure out what happens: <ul style="list-style-type: none"> When we change the position of light in the box system, the phenomenon occurs. Reflection happens on the side that it is, while the side that it is coming from. The same way that phenomena happens when there is a difference in light between the rooms. Light travels in straight lines. For us to see anything, light needs to leave a light source, bounce off the object, and travel in a direct path to reach our eyes. 	
& Navigators to Next Lesson: We figure out that the difference in light between the rooms is caused by a less efficient light path from other side of the room. We wonder how the light travels in a straight line? How do we know that light travels in a straight line?			

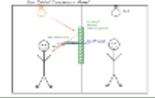
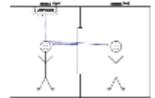
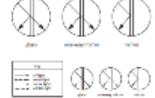
6.1 Light & Matter

Unit 6.1

UNIT STORYLINE

Why do we sometimes see different things when looking at the same object?

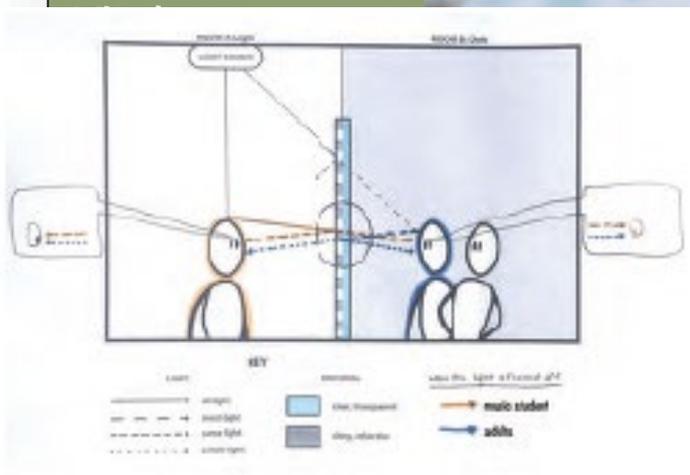
Why do we see different things when looking at the same object?

Lesson/Question	Phenomena or Design Problem	What we do	What we figure out	How we represent it
LESSON 1 4 days How can something act like a mirror and a window at the same time? Anchor Phenomenon 	 A piece of material looks like a mirror from one side and a window from the other side.	We watch a curious video of a person who explains their reflection in what seems to be a mirror. The person could see the person on the other side of the mirror, but those people can see through it also a window. We wonder how something can act like a mirror and window at the same time. We investigate the phenomenon by building a model that represents it. We develop an Initial Class Conceptual Model to explain related phenomena, and develop a Driving Question Board and Light Cone Knowledge Chart. We figure out these things: <ul style="list-style-type: none"> Some materials can be reflective and see through at the same time. Whether the material is reflective or see-through may be related to what there is in it. 	We figure out: <ul style="list-style-type: none"> Some materials can be reflective and see through at the same time. Whether the material is reflective or see-through may be related to what there is in it. 	
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LESSON 3 2 days How can something act like a mirror and a window at the same time? Anchor Phenomenon 	 The way we mirror phenomena can happen, when there is a difference in light between the two sides of the material?	In this lesson, we observe the same way mirror material out of the room. We move the flashlight in the room. It makes both rooms get and make both rooms dark. We figure out what happens: <ul style="list-style-type: none"> When we change the position of light in the box system, the phenomenon occurs. Reflection happens on the side that it is, while the side that it is coming from. The same way that phenomena happens when there is a difference in light between the rooms. Light travels in straight lines. For us to see anything, light needs to leave a light source, bounce off the object, and travel in a direct path to reach our eyes. 	We figure out: <ul style="list-style-type: none"> When we change the position of light in the box system, the phenomenon occurs. Reflection happens on the side that it is, while the side that it is coming from. Light travels in straight lines. For us to see anything, light needs to leave a light source, bounce off the object, and travel in a direct path to reach our eyes. 	
& Navigators to Next Lesson: We figure out that the difference in light between the rooms is caused by a less efficient light path from other side of the room. We wonder how the light travels in a straight line? How do we know that light travels in a straight line?				

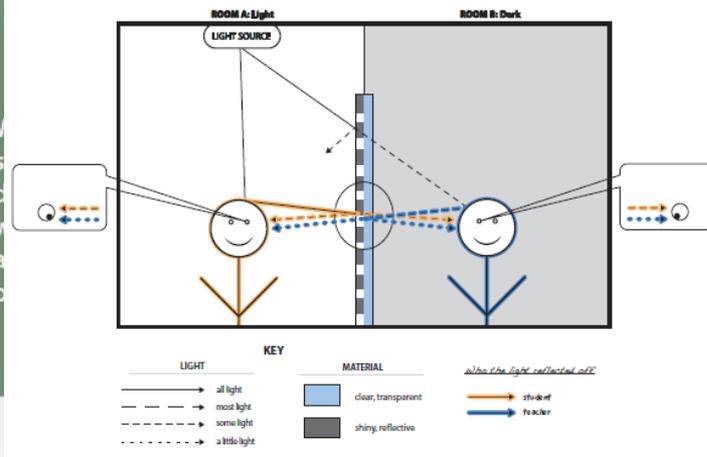
Improved quality of icons, photos and graphics

Redesigned Teacher Guide

Light & Matter



6.1 Light & Matter
Teacher Edition



6.1 Light & Matter



- Two banker boxes
- Teacher prep ~20 mins per group (2.5-3 hours total)



- One cardboard box
- Teacher prep ~10 mins per group; recommend that students do setup

- ✓ Fewer materials
- ✓ Cut prep time in half or more
- ✓ Better storage option

7.1 Chemical Reactions



- Teachers make 100's bath bombs (one per student x 4 recipes)
- Students test all 4 bath bombs



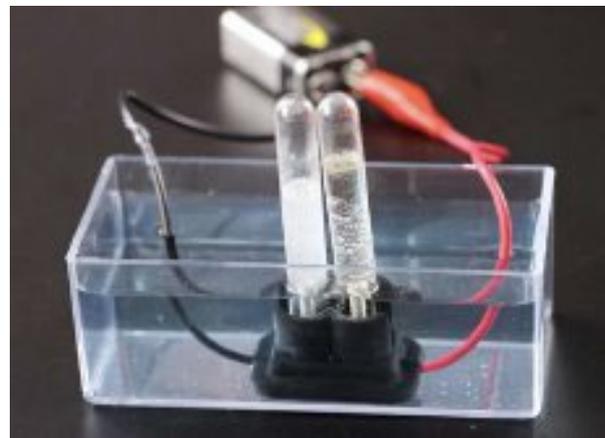
- Teachers make 160 bath bombs
- Students test first round of bath bombs, then observe subsequent bombs via video

- ✓ Fewer consumable materials
- ✓ Cut prep time in half (or more)
- ✓ Less instructional time

7.1 Chemical Reactions



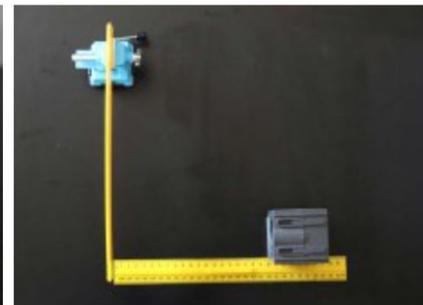
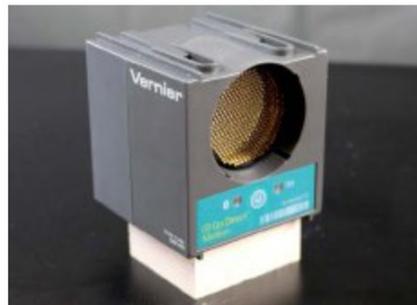
- Electrolysis setup made of expensive individual materials
- Difficult and time-consuming to set up



- Carolina® proprietary micro electrolysis apparatus

- ✓ Less expensive
- ✓ Set up in 5 mins

8.2 Sound Waves



OpenSciEd Launch PD

Day 1: Phenomena and Questions

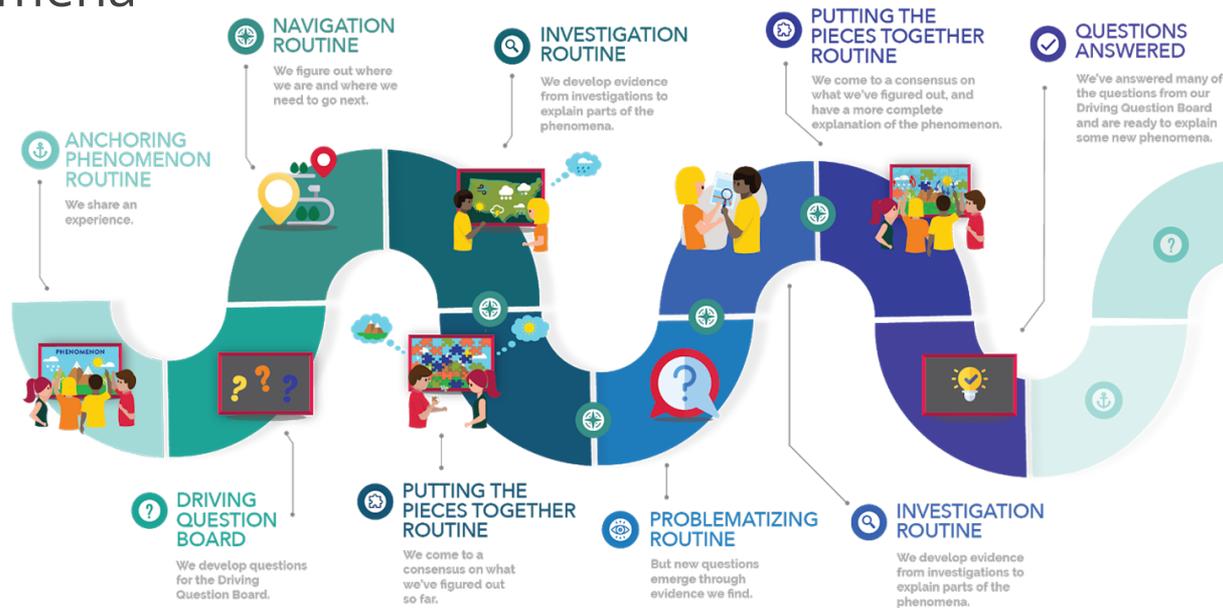
Introduction Session



OpenSciEd Instructional Model

OpenSciEd units are based on a science storyline.

- Each step is driven by students' questions that arise from phenomena



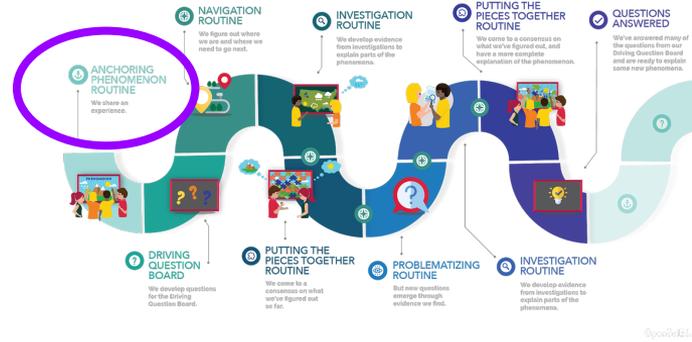
OpenSciEd Instructional Model



ANCHORING
PHENOMENON
ROUTINE



CAROLINA



All units have an anchoring phenomenon or problem.

This results in student-driven questions, ideas and initial explanations that are then explored in future lessons.



Anchoring Phenomenon Routine

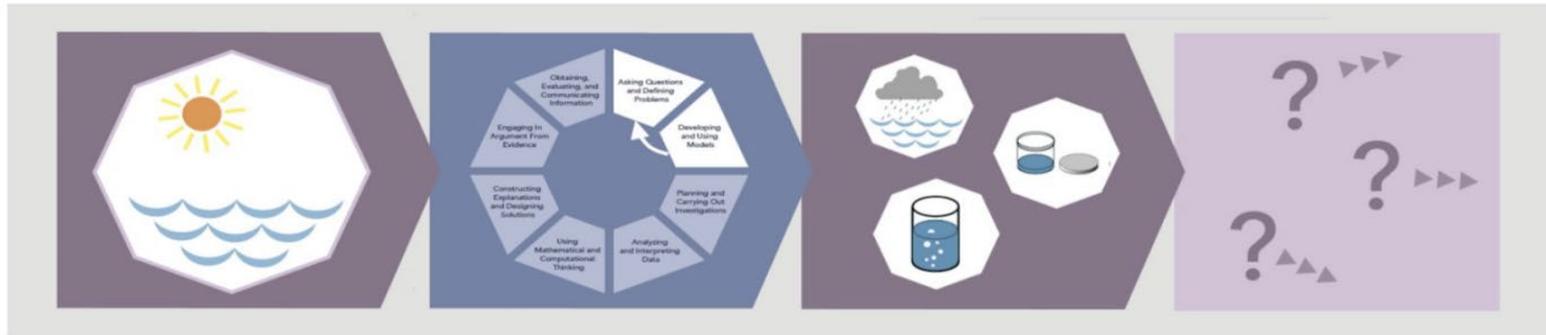
This is the first routine of the OpenSciEd curriculum to position students in making sense of a phenomenon, grounding all students in a common experience and raising student questions.

*Element #1:
Explore the
phenomenon*

*Element #2:
Attempt to
make sense*

*Element #3:
Identify related
phenomenon*

*Element #4:
Questions and
next steps*

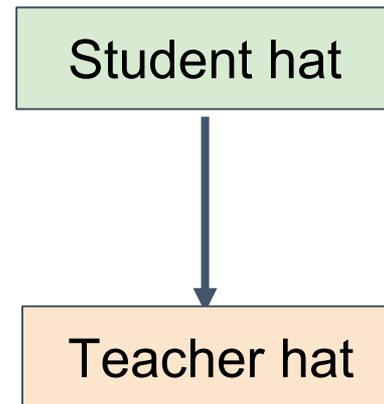


Anchoring Phenomena Routine Tracker

Anchoring Phenomena Routine Tracker

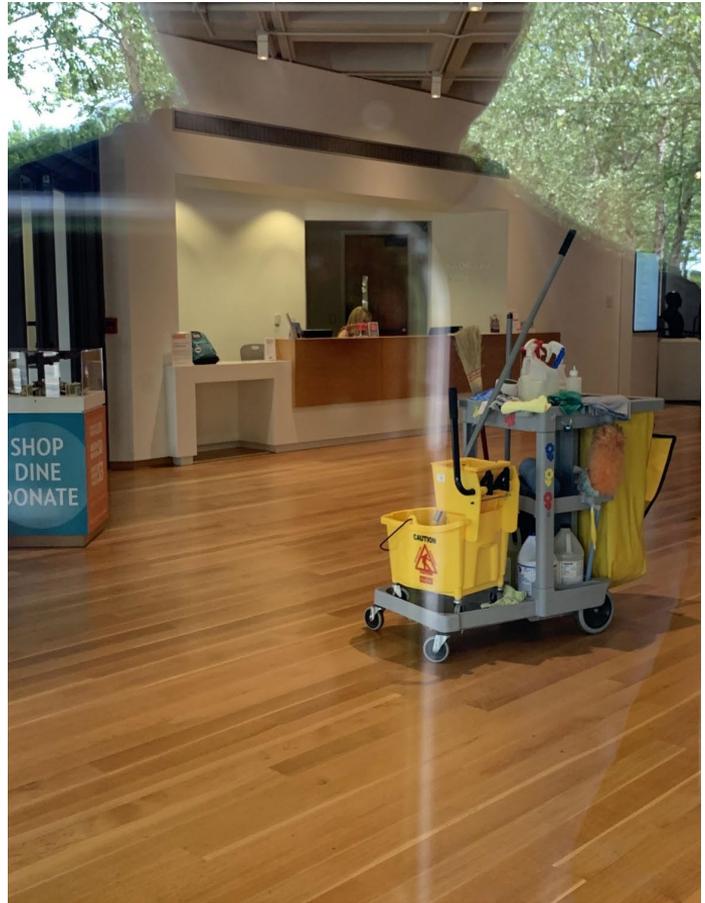


	Element 1: Explore the Phenomenon  What do we notice?	Element 2: Attempt to Make Sense of the Phenomenon  How can we explain this? Do our explanations agree?	Element 3: Identify Related Phenomena  Where else does something similar happen?	Element 4: Develop Questions and Next Steps  What should we do to figure out how to explain this?
Notes about what you or the students did.				
How does this support <i>figuring out</i> ?				
How does this support a <i>classroom culture where all students have access</i> ?				



Welcome 6th Grade Students!





Explore an Interesting Phenomenon



Make a 2column chart on a blank page on the **left side** of your science notebook and record what you notice and wonder about.

Notice	Wonder



Watch the [video](#) closely and record things you notice and wonder about.

INDIVIDUAL 

WHOLE CLASS





Share Noticings and Wonderings



What did you notice happening in the video?
What did you wonder about?





What do we think is happening?



Turn and Talk

- Why do the adults see the music student?
- Why does the music student see themselves and not the adult?



Initial Explanations



What “parts” or “components” from the scene in the video do we think are important for explaining the phenomenon?

What’s not important?

What are we not certain about?



Develop a Diagram



Write these two questions in your science notebook:

- Why do the adults see the music student?
- Why does the music student see themselves and not the adults?

Create a diagram to explain as much as you know about the two questions.

- Include all the important parts we agreed on and label them.
- Use pictures, symbols, and words to explain **how the parts interact** to cause the phenomenon.
- Record questions that you have if you become stuck.

The diagram is drawn on lined paper and is divided into two main sections by a vertical line.

Mirror-Window Phenomenon

Notice	Wonder

Mirror-Window Diagram

Why do the adults see the music student?

Why does music student see themselves and not the adults?

Below the text, there are two simple stick figures drawn on a horizontal line, representing the student and the adults.



Navigation

A **scale model** is a physical representation of something in the world. It can help us explain phenomena or solve problems.



Where have you seen or used scale models in your life?



Students would recall prior experiences and consider parts that should be represented in scale model.



Mapping the Model to the

This part of the box model ...	is like this part of the real world ...	because ...	and is not like it because ...



Investigate Using the Box Model

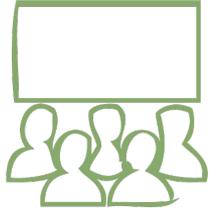


Locate your Notice and Wonder chart. Draw a line below your last noticing from the video. Add noticings from the *Box Model Investigation*.

Mirror-Window Phenomenon		Mirror-Window Diagram
Notice	Wonder	
Video		Why do the adults see the music student? Why does the music student see themselves and not the adults?
Box model		

1. Turn on the flashlight for Room A.
2. Peek through the viewing hole for Room A. Record noticings to your Notice and Wonder chart.
3. Peek through the viewing hole for Room B. Record noticings.
4. Turn off the flashlight.
5. Add wonderings to your chart.
6. If time allows, remove Room A from the box model.

Noticings from the Box Model Investigation



- What was similar between what you saw in the video and what you saw in the box model?
- What was different?
- What new things did you notice in the box model?

Limitations of the Box Model



If we use this box model to test ideas about the one-way mirror phenomenon, what *differences* between the box model and the real world shown in the video could be important to keep in mind?

In the Jamboard/ On-iPads

1. Related Phenomenon (1 min)

- What other experiences have you had, or what objects have you seen, that the video and model remind you of?

1. Driving Question Board

- Post 1 or more posts with questions you have about the video or related phenomena.
- Read the questions that others posted.

1. Ideas for Investigation

- What investigations could we do in our class to help us gather data to answer some of our questions on the Driving Question Board?



Where to next?

We have a mission to accomplish as a class!

- Our questions represent what we hope to figure out.
- Our ideas for investigations and sources of data will help us.

If we switch the light from Room A to Room B, what do we predict will happen?



Welcome Back Educators!





Driving Question Board: P

Is the light an important factor for this experiment to be successful?
JD

What would happen with no light Zach

What happens if you switch the brightness of each light?
-Timmy

THINK:
What questions do you have?
Make sure your question can be answered in more than just a yes or no response.
DIRECTIONS:
1. Write your question on a sticky note (put your initials, too!)
2. Drag your sticky note to the corresponding area on our Consensus Model.

Can we make more light to see if the light is really making the mirror? -TC

what would happen if we made both of the room's light? -NY

What would happen if we turned the mirror around? Would it be transparent to Mr. Bean or would it be the same? -Joni

if the three men had a light but Mr Bean did not then would the experiment be switched and Mr bean could see them, three men could not? - Taylor

What would happen if the three men's room had the light? Would they still be able to see Mr. Bean? - EV

why is one dark if there is light on the other side? does this help us understand the concept of a 2 - way mirror if answered? - Taylor

what if you added light in both rooms ~ Lily

What happens when we flip the mirror? -Harrison

if the light was on in the second room, would it still be a 1-way mirror? -Olivia G

Ask Mr. Bean if he COULD or COULDN'T see the other people OLIVIA B

What would happen if you took the mirror side of the mirror off what would happen, would you still have a mirror and a window, or will it just be a window. Cormac Flanagan

How does the mirror work and how can you see through the other side? - Henry

What would happen if we put the light on both sides? -Ella

Does the second room having no light matter? -OliviaC

If both rooms had lights, could we still see through the "mirror" and could one side still see themselves? -AR

How come mr.bean couldn't see the three men on the other side in room B, even though there was a little bit of light coming from room A into room B. At that point we could see the three men because the room

Can this be made with at-home objects? Does light matter? - Anna

What is making the one way glass one way glass -Payton

what would happen if you switched the light KK

Screenshot



Purpose of Our Consensus Discussion



The goal of this discussion is to figure out areas of agreement and disagreement in our diagrams.

We also want to practice our norms.

Our discussion is guided by these questions:

- What do we all seem to agree on?
- What do we disagree on?
- What are some new ideas that we may want to consider?



Develop norms for consensusing discussion



1. **Respectful** Our classroom is a safe space to share
2. **Equitable** Everyone's participation and ideas are valuable
3. **Committed to our community** We learn together
4. **Moving our science thinking forward** We work to figure things out



Classroom Norms

<p>Respectful</p> <p>Our classroom is a safe space to share.</p>	<ul style="list-style-type: none"> • We provide each other with support and encouragement. • We share our time to talk. We do this by giving others time to think and share. • We critique the <i>ideas</i> we are working with but not the <i>people</i> we are working with.
<p>Equitable</p> <p>Everyone's participation and ideas are valuable.</p>	<ul style="list-style-type: none"> • We monitor our own time spent talking. • We encourage others' voices who we have not heard from yet. • We recognize and value that people think, share, and represent their ideas in different ways.
<p>Committed to our community</p> <p>We learn together.</p>	<ul style="list-style-type: none"> • We come prepared to work toward a common goal. • We share our own thinking to help us all learn. • We listen carefully and ask questions to help us understand everyone's ideas. • We speak clearly and loud enough so everyone can hear.
<p>Moving our science thinking forward</p> <p>We work together to figure things out.</p>	<ul style="list-style-type: none"> • We use and build on others' ideas. • We use evidence to support our ideas, ask for evidence from others, and suggest ways to get additional evidence. • We are open to changing our minds. • We challenge ourselves to think in new ways.





Initial Class Consensus Model to Explain the



Questions we are trying to answer:

- Why do the adults see the music student?
- Why does the music student see themselves and not the adults?



Brainstorm Related Phenomena



Turn and Talk

- What other experiences have you had, or what objects have you seen, that the video and the box model remind you of?

Home Learning: Selfmentation



Phenomenon: An object, like the one-way mirror, looks different in different conditions.

Where do you see a similar thing in your life? your home, your neighborhood or community?

Take a photo or hand-draw one example.

Students would complete and share on Day 3 of Lesson 3. We will build on Day 3 of PD.

Types of Questions to Ask

All questions are welcomed!

As you write your question(s), ask yourself these questions:

- If we answer this question, will it help us explain the phenomenon?
- Can we investigate this question to learn more about the phenomenon?
- Can it be answered with a yes or no? If so, can I write it in a different way?

