Welcome to Amplify Science!
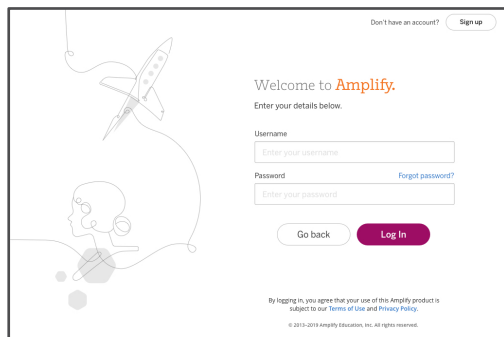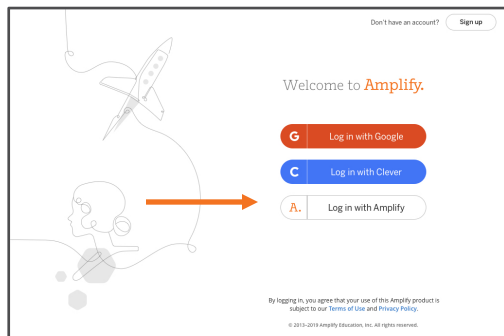
Do now: Name tent and login


1. Make a name tent
2. Go to learning.amplify.com
3. Select Log in with Amplify
4. Enter teacher demo account credentials
   - XXXX@tryamplify.net
   - Password: AmplifyNumber1
5. Explore as we wait to begin

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Amplify Science
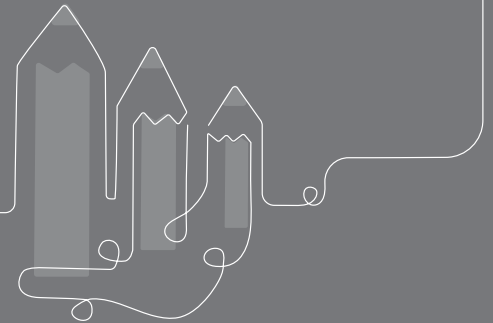
Light and Sound Implementation workshop

A professional learning experience
designed by the Lawrence Hall of Science

NYC DOE
November 5, 2019
Presented by Your Name

Amplify.
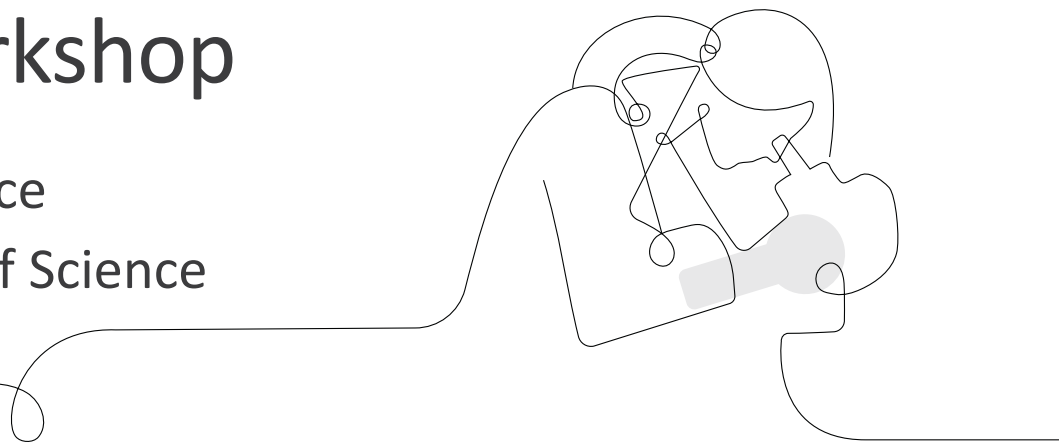
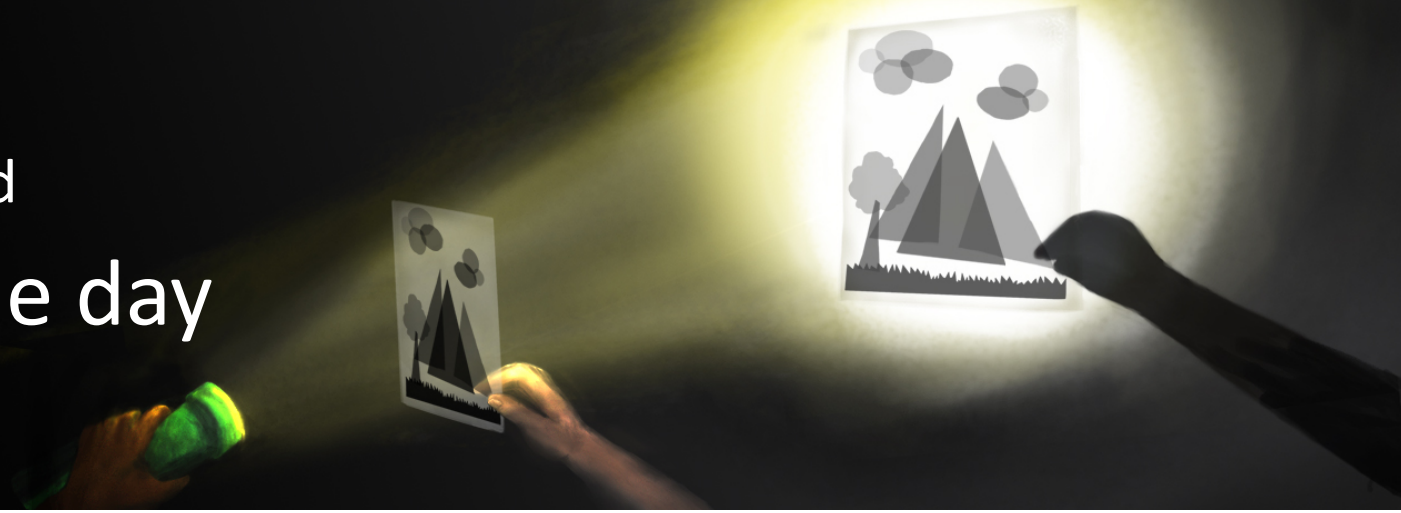# Workshop goal

- Prepare teachers to implement Light and Sound in their classrooms
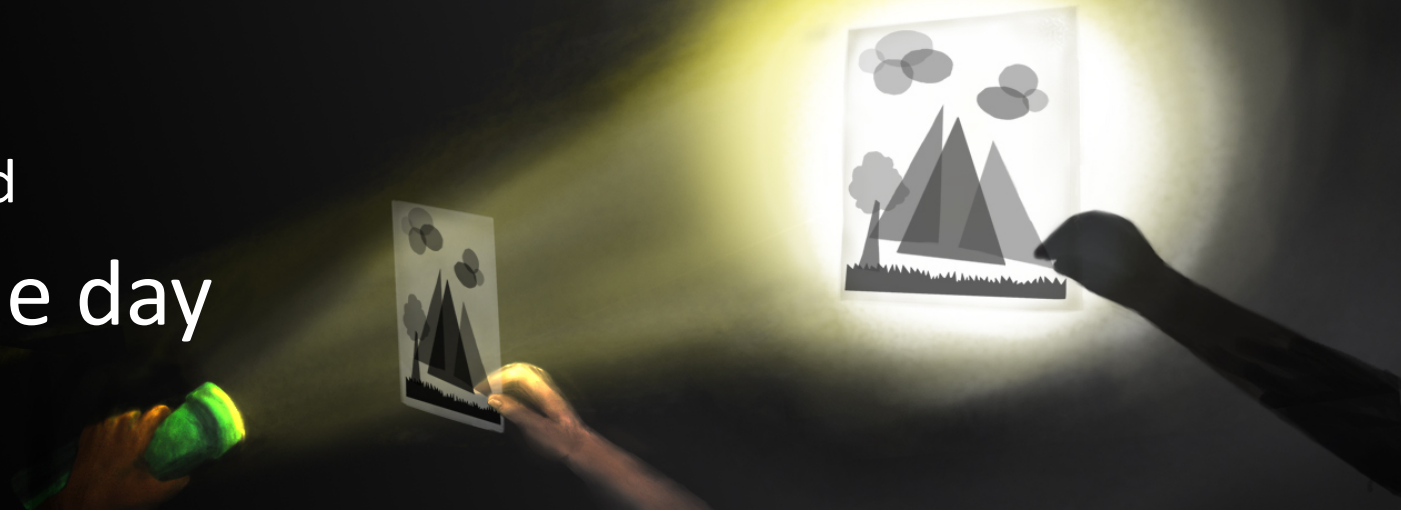
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Light and Sound

Plan for the day

- Framing and reflection
- Experiencing the unit
- The story of the unit

- Planning to teach
- Closing

Amplify.

Light and Sound

Plan for the day

- Framing and reflection
- Experiencing the unit
- The story of the unit

- Planning to teach
- Closing

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Framing and reflection

The purpose of this part of the day is for you to:

- Share your experience implementing Amplify Science.
- Refresh your understanding of key program resources and Amplify's approach.
- Identify successes and areas of need in your classroom, which will frame your work throughout the day.

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Reflection roles

- Facilitator: Asks questions to ensure that there is equity of voice

- Timekeeper: Keeps team on time/task

- Recorder: Captures the information on paper as each person is presenting

- Summarizer: Shares highlights and summaries to the larger group

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Scenario 1

Ms. Lambertsen needs to refresh her content knowledge of her next unit. She has a few questions about the science content in the unit, and wants to be ready when her students ask questions, too.

To deepen her understanding of the science ideas in the unit, what resources would you recommend she use?

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Scenario 2

Mr. Garcia wants to plan what data he can collect on his students during an upcoming lesson and how he can then use the data to inform instruction to best support his students. He's also looking for some strategies to support students in his classroom that need more challenge.

What can he look at in the Teacher's Guide to support his planning?

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Scenario 3

To prepare to administer the End-of-Unit Assessment, Ms. Lucey wants to familiarize herself with how students with different levels of understanding might respond to the assessment. She's also looking for some insight into how to evaluate their responses.

Where can she look for information to support her preparation to administer the assessment?

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Scenario 4

Mr. Moore needs to identify the standards in his upcoming unit for his principal. Specifically, his principal wants to know how students engage with the three dimensions of NGSS to figure out the unit phenomenon/problem.

Where would Mr. Moore find out the answer to his principal's question? How do students engage in three-dimensional learning in this unit?

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Scenario 5

At back to school night, Mr. Patel is going to tell his students' families about the next unit his class will work with. He wants to describe how students develop ideas through Chapter 1.

How do you think he could explain this to his students' families? Where might he look to find information that will help him plan what to say?

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Scenario 6

Mrs. Doolittle is starting a new unit next week (the same one you are diving into today!). She's familiar with what students learn throughout the unit, but she's not sure where to start preparing to teach the first lesson.
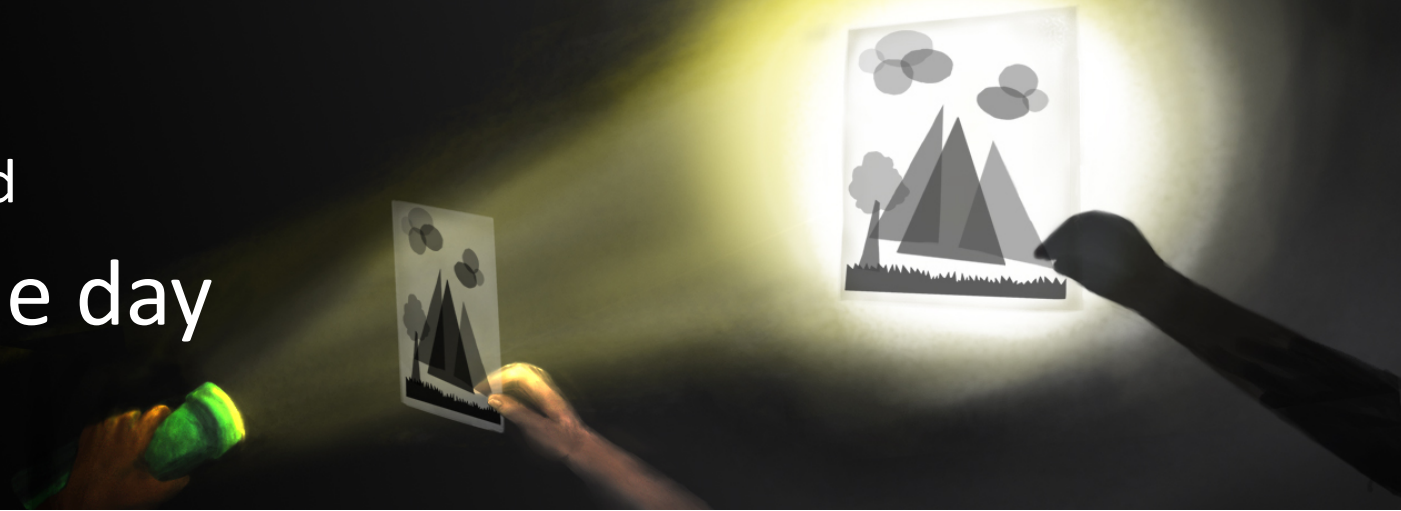
What do you suggest she refer to as she prepares for her first lesson? What should she do or read first, and what should she do after that?
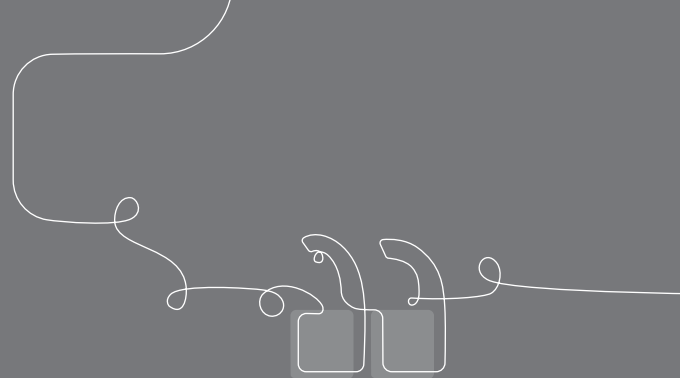
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Questions?

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Light and Sound
Plan for the day

- Framing and reflection
- Experiencing the unit
- The story of the unit

- Planning to teach
- Closing

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Experiencing the unit

The purpose of this part of the day is for you to:

- Understand how a phenomenon motivates student learning.

- Understand what students learn in a chapter of Light and Sound, and how they learn it.

- Reflect on the instructional design in the Amplify Science program.

- Describe the content focus and coherence of the unit.

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Elementary school course curriculum structure

Grade K

- Needs of Plants and Animals
- Pushes and Pulls
- Sunlight and Weather

Grade 1

- Animal and Plant Defenses
- Light and Sound
- Spinning Earth

Grade 2

- Plant and Animal Relationships
- Properties of Materials
- Changing Landforms

Grade 3

- Balancing Forces
- Inheritance and Traits
- Environments and Survival
- Weather and Climate

Grade 4

- Energy Conversions
- Vision and Light
- Earth's Features
- Waves, Energy, and Information

Grade 5

- Patterns of Earth and Sky
- Modeling Matter
- The Earth System
- Ecosystem Restoration

AmplifyScience

authored by THE LAWRENCE HALL OF SCIENCE UNIVERSITY OF CALIFORNIA, BERKELEY

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Planning your year

Overview: Amplify Science K-5 course structure

Problem-based deep dives

Students inhabit the role of scientists and engineers to explain or predict phenomena. They use what they figure out to solve real-world problems.
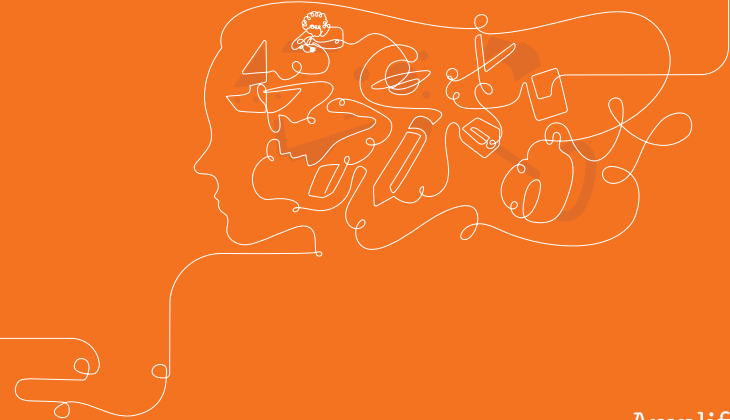
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Amplify Science approach
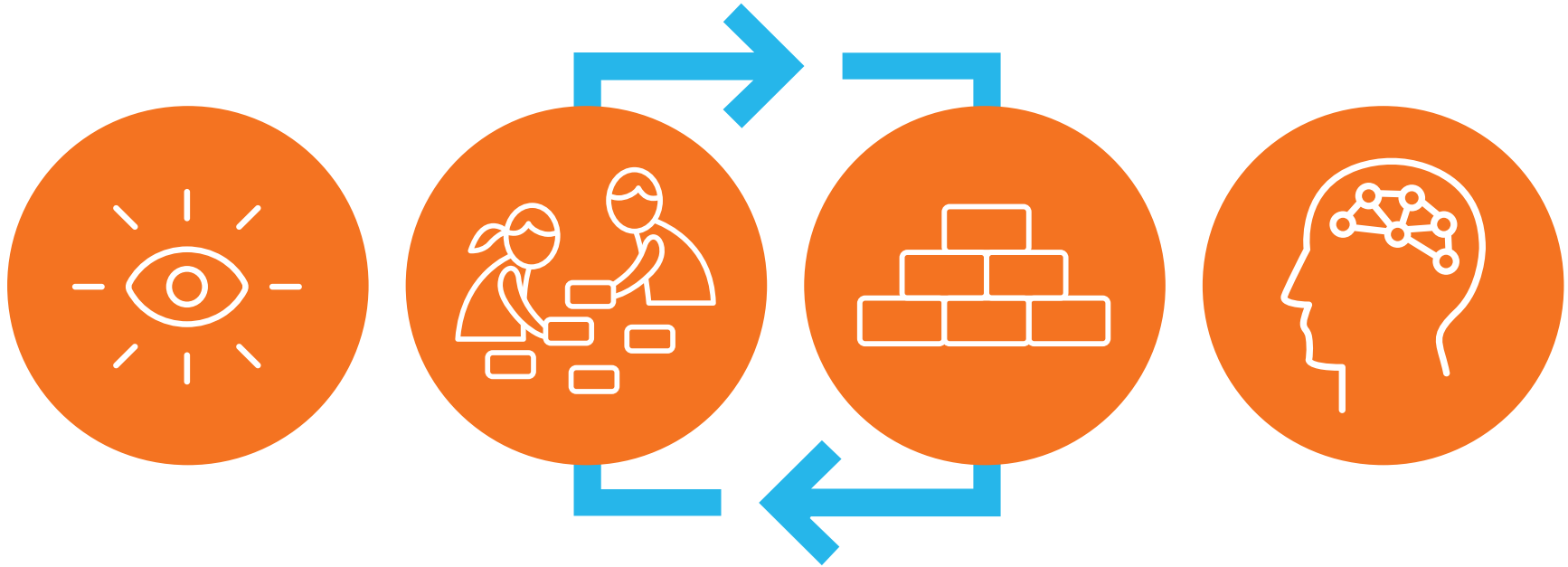
Introduce a phenomenon and a related problem

Collect evidence from multiple sources

Build increasingly complex explanations

Apply knowledge to a different context

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Figure out,
not learn about

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PRACTICES

CORE IDEAS
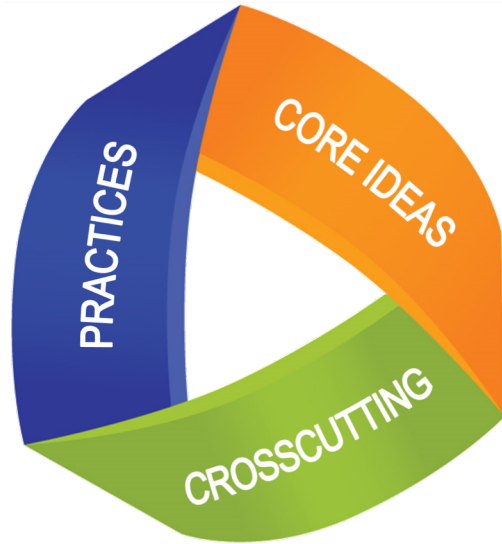
CROSSCUTTING

Standards as three-dimensional performance expectations that integrate disciplinary core ideas, science and engineering practices, and crosscutting concepts

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Unit Level 3-D Statement

Key

Practices   **Disciplinary Core Ideas**   **Crosscutting Concepts**

Unit Level

Students investigate and construct explanations about how light and sound can be used to create solutions for a puppet-theater company (cause and effect). Students apply what they learn in order to design solutions to create shadow scenery and sound effects for a puppet-theater show (patterns).

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Grade 1 | Light and Sound

Instructional Sequence

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We will start learning about **light and sound**.

We will be **engineers** who work with light and sound. Today we will learn what light and sound engineers do.

Let's get ready by **observing** some pictures and describing what we notice.
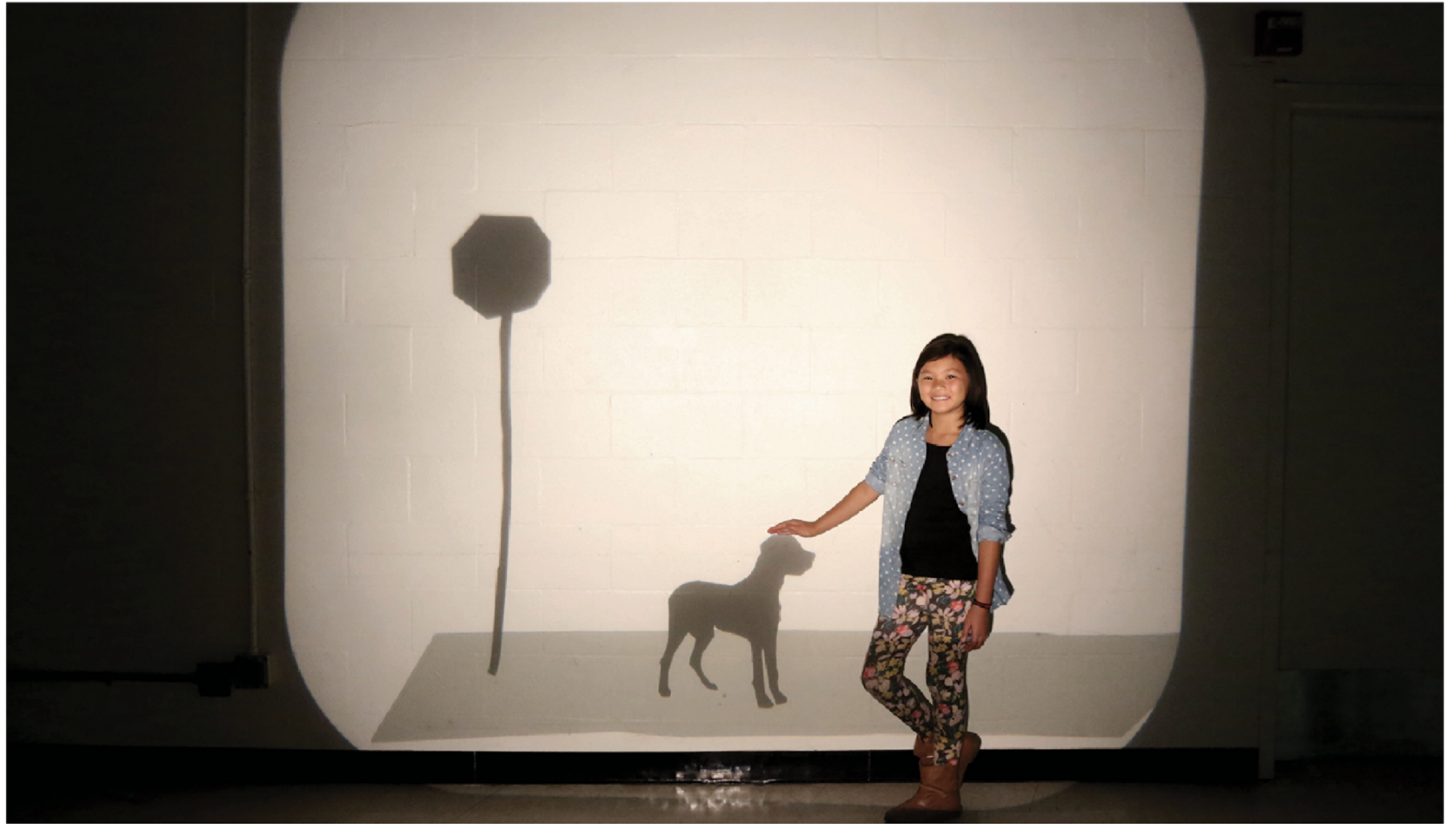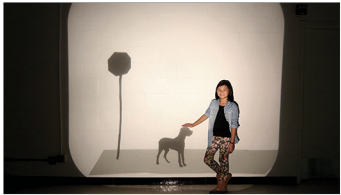
What was the **same** in all of the pictures we just observed?

A **puppet-theater company** has come to us with a **problem** that they think we can **solve** by using **light and sound**.

Their puppet shows use many heavy parts that are difficult to carry around. They are hoping that we can figure out how to **use light to make a picture on a wall** instead.

Let's look at a picture of their puppet shows and talk about what we notice.

Puppet Scene Design Goals

- The scene should have a <u>bright</u> area.

- The scene should have a <u>dark</u> area.

- The scene should have a <u>medium bright</u> area, between bright and dark.

This chart shows our **design goals**.

The puppet-theater company asked us to make scenes that create **three different areas** on the wall.

Unit Question

How do we make different parts of a surface brighter or darker?

Unit Map

Light and Sound
Planning for the Unit

Unit Map 🌐

Unit Map

How can we use light and sound to design shadow scenery and sound effects for a puppet theater?

Students take on the dual role of light engineers and sound engineers for a puppet-show company as they investigate cause-and-effect relationships and learn about the nature of light and sound. They apply what they learn to designing shadow scenery and sound effects for a puppet show.

Chapter 1: How do we make brighter or darker areas on a surface?

Students figure out: Without light, we cannot see. Light comes from a source and travels to a surface. Light from the source must be getting to the surface in order to make some parts of the surface look bright. If there is no light source, a surface looks dark.

How they figure it out: The class attempts, in vain, to make the classroom completely dark, identifying light sources at each failed attempt. Students read a book about whether one can see in the dark, and then they hunt for light sources in their school and in the pictures of a book. Students investigate a series of questions with their own light source (a flashlight), investigating how light gets to a surface.

Chapter 2: How do we make a dark area in a bright puppet show scene?

Students figure out: A dark area is the result of putting an object between a light source and a surface. When an object blocks a light source, the surface behind the object looks darker. This dark area is called a shadow.

How they figure it out: Students explore by making shadows on different surfaces. They then investigate how to make a dark area on the surface by using different materials to block light from reaching a surface.

Chapter 3: How do we make bright, medium bright, and dark areas in a puppet show scene?

Students figure out: Different materials let different amounts of light pass through. Bright areas are the result of all or almost all the light passing through an object and reaching a surface. This happens if there is no object or if the object is transparent. Medium-bright areas result when only some of the light passes through and reaches the surface. Dark areas happen because no light passes through an object. Light is blocked, so the surface looks dark.

How they figure it out: Students refine their understanding of how light interacts with different materials and work as light engineers to plan, make, and test shadow scenery. Based on what they learn, students revise their own shadow scene to meet a set of design goals. Students write explanations of their scenes for the puppet-show company.

Chapter 4: How do we design a sound source to go with a puppet show scene?

Students figure out: Sound has a source, just like light does. Sound is made when an object vibrates. The object that vibrates is the source of the sound. Like light, sound also travels. Sound travels from the source to our ears. You can start and stop sound by starting and stopping the vibration of an object.

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Light and Sound solution
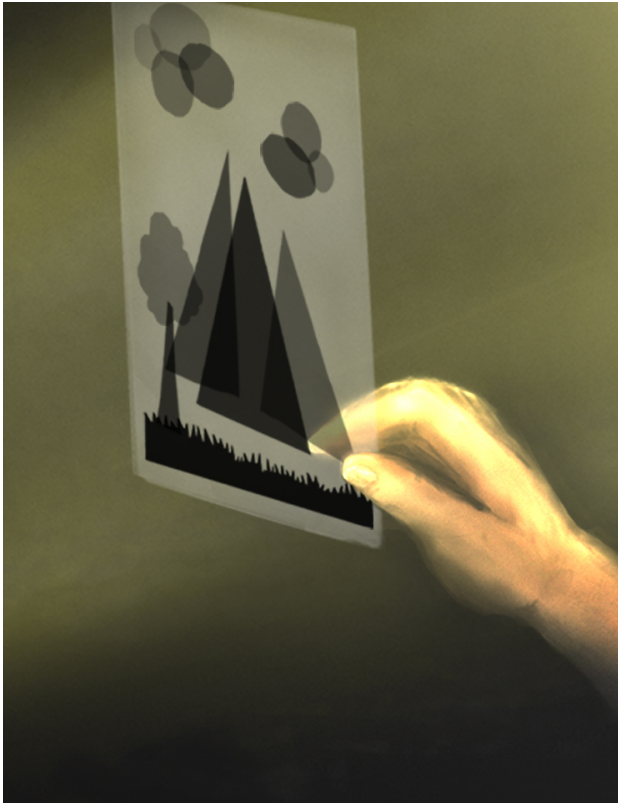
- We can put different materials between a light source and a surface to make areas of different brightness in our puppet scene.
- When all light passes through a material, the surface looks bright.
- When some light passes through a material, the surface looks medium bright.
- When no light passes through a material, the surface looks dark.

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Coherence as a design principle

- Supports students in building a rich network of concepts
- Allows for increasingly complex explanations
- Supports students in integrating ideas
- Provides motivation to look more deeply at the phenomenon

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Coherence Flowchart structure

The problem students work to solve

↓

Chapter Question

↓

Investigation Question

↓

Activities that serve as evidence sources and reflection opportunities

↓

Key concept or concepts

↓

Activities supporting application of key concepts to the problem

Explanation that students can make to answer the Chapter Question

How do the specific components of the Coherence Flowchart work together to support students in solving the unit problem?

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Coherence Flowchart structure

The problem students work to solve

Chapter Question

Investigation Question	Investigation Question
• Evidence source • Evidence source • Reflection opportunity	• Evidence source • Reflection opportunity • Evidence source
• Key concept • Key concept	• Key concept • Key concept

• Activities supporting application of key concepts to the problem

Explanation that students can make to answer the Chapter Question

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Chapter 1: How do we make brighter or darker areas?

⌄ JUMP DOWN TO CHAPTER OVERVIEW

Lesson 1.1:
Pre-Unit Assessment

Lesson 1.2:
Can You See in the Dark?

Lesson 1.3:
Light-Source Hunt

Lesson 1.4:
Making Sense of Light Sources and Brightness
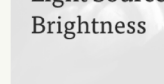
Lesson 1.5:
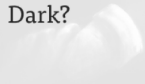Light Makes Surfaces Look Bright

Amplify.
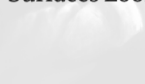
Chapter 1: How do we make brighter or darker areas?

⌄ JUMP DOWN TO CHAPTER OVERVIEW

Lesson 1.1:
Pre-Unit Assessment

Lesson 1.2:
Can You See in the Dark?

Lesson 1.3:
Light-Source Hunt

Light makes things look bright.
You need some light to see.

Lesson 1.4:
Making Sense of Light Sources and Brightness

Lesson 1.5:
Light Makes Surfaces Look Bright

All light comes from a source.

When light from a source gets to a surface, the surface looks bright.

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Chapter 2: How do we make a dark area in a bright puppet show scene?

⌄ JUMP DOWN TO CHAPTER OVERVIEW

Lesson 2.1:
Exploring Shadows

Lesson 2.2:
What Made This
Shadow?

Lesson 2.3:
Investigating
Blocking

Lesson 2.4:
Designing a Cutout
to Make a Dark Area

Lesson 2.5:
Explaining the Dark
Part of the Surface

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Chapter 2: How do we make a dark area in a bright puppet show scene?

⌄ JUMP DOWN TO CHAPTER OVERVIEW

Lesson 2.1:
Exploring Shadows

Lesson 2.2:
What Made This Shadow?

Lesson 2.3:
Investigating Blocking

Lesson 2.4:
Designing a Cutout to Make a Dark Area

Lesson 2.5:
Explaining the Dark Part of the Surface

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Chapter 2 Question

How do we make a dark area in a bright puppet show scene?

Investigation Question:

How do we stop light from getting to one part of a surface?

Light and Sound: Puppet-Theater Engineers

The problem students work to solve	How can we use light and sound to design shadow scenery and sound effects for a puppet theater?
Chapter 2 Question	How do we make a dark area in a bright puppet show scene?
Investigation Question	How do we stop light from getting to one part of a surface? (2.1-2.3)
Evidence sources and reflection opportunities	• Explore how to make shadows of different shapes and sizes around the classroom (2.1) • Use Explanation Language Frame to explain how shadows were formed (2.1) • Draw and write engineer's notes about making shadows (2.1) • Read What Made This Shadow? (2.2) • Engage in kinesthetic Blocking Model to show how shadows are made by blocking light (2.2) • Sort shadow cards (light source, blocking object, shadow) (2.2) • Draw and write to explain how shadows in What Made This Shadow? formed (2.2) • Investigate how different materials block light using Investigation Kits (2.3)
Key concepts	• When light is blocked by an object, the surface behind the object looks dark, and we call this a shadow. (2.2) • When light is blocked by a material, the surface behind the material looks dark, and we call this a shadow. (2.3) (Revised from 2.2)
Application of key concepts to the problem	• Design, test, and evaluate a cutout to form a dark area in the puppet scene (2.4) • Diagram how the designed cutout blocks light in the puppet scene (2.5) • Use Explanation Language Frame and Writing Planner to explain the Chapter 2 Question (2.5)
Explanation that students can make to answer the Chapter 2 Question	A dark area is the result of putting an object between a light source and a surface. When an object blocks a light source, the surface behind the object looks darker. This dark area is called a shadow.

Pg. xx

What are students figuring out?

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Chapter 2: How do we make a dark area in a bright puppet show scene?
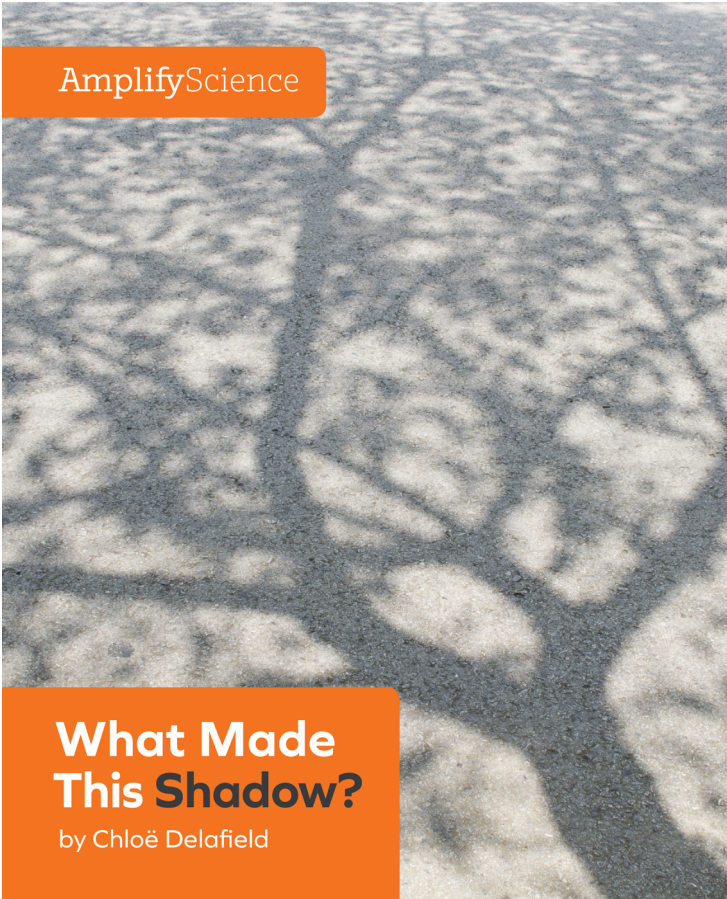
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Lesson 2.5:
Explaining the Dark Part of the Surface

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What Made This Shadow?

by Chloë Delafield

Today, we will read to build on what we've learned about making shadows.

What do you notice about the front cover?

Shadows come in all shapes and sizes.
Round ones! Pointy ones! Big ones! Little ones!
Some are very dark and some are not as dark.

3

When we read, we can **ask questions** about what we wonder.

I have a question about a picture on this page.

shadow

surface

light source

Let's guess what made some shadows.

What made this shadow?

4

5

What made this shadow?

5

We can also ask questions that connect to our science ideas.

My question is, **Where did the light come from to make this shadow?**

A dog made this shadow. The dog **blocked** light from the sun. The light did not get to the driveway, so there was a shadow.

What made this shadow?

6

7

What made this shadow?

7

I still wonder about my first two questions. I also have a new question.

I wonder, **How was this shadow made?**

A toy car made this shadow. The toy car blocked light from the lamp. The light did not get to the wall, so there was a shadow.

What made this shadow?

8

9

A flower made this shadow. The flower blocked light from the lamp. The light did not get to the wall, so there was a shadow.

What made this shadow?

10

11

An umbrella made this shadow. The umbrella
blocked light from the sun. The light did not get
to the sidewalk, so there was a shadow.

12

What made this shadow?

13

A glass made this shadow. The glass blocked light from the candle. The light did not get to the table, so there was a shadow.

What made this shadow?

14

15

Hands made this shadow. The hands blocked light from the flashlight. The light did not get to the wall, so there was a shadow.

What made this shadow?

16   17

A bike made this shadow. The bike blocked light from the streetlight. The light did not get to the driveway, so there was a shadow.

What made this shadow?

18

19

A tree made this shadow. The tree blocked light from the sun. The light did not get to the grass, so there was a shadow.

What made this shadow?

20

21

A kid made this shadow. The kid blocked light from the sun. The light did not get to the sidewalk, so there was a shadow.

Lots of things make shadows. Here are the shadows we saw. Now you can go find more mystery shadows!

A dog made this shadow. The dog **blocked** light from the sun. The light did not get to the driveway, so there was a shadow.

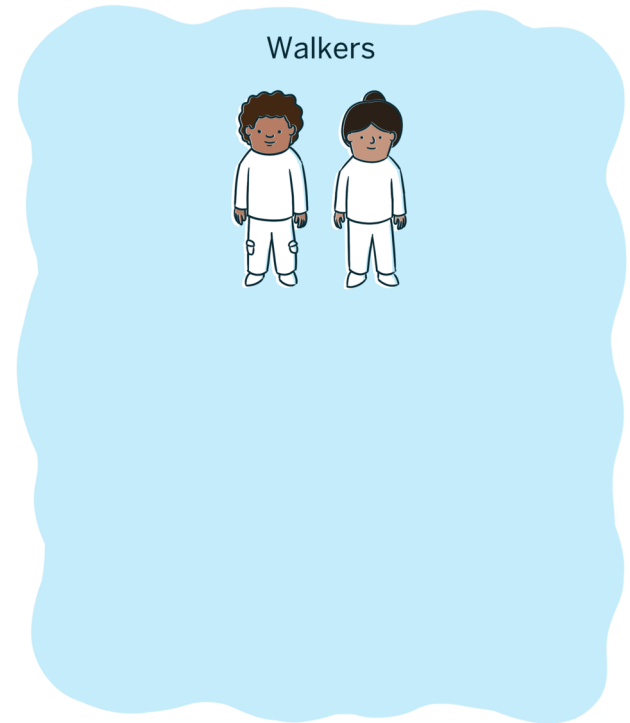

What made this shadow?

6

7

Vocabulary

block

to stop something from passing through

When we are trying to understand what a word or idea means, sometimes it is helpful to act it out or see someone else act it out.

We're going to use our **bodies** to act out what it means for something to **block** or **be blocked**.

Blocking Model Part 1

1.

Two students stand side-by-side. These students are the walkers.

2.

Walkers walk across to the other side of the area.

3.
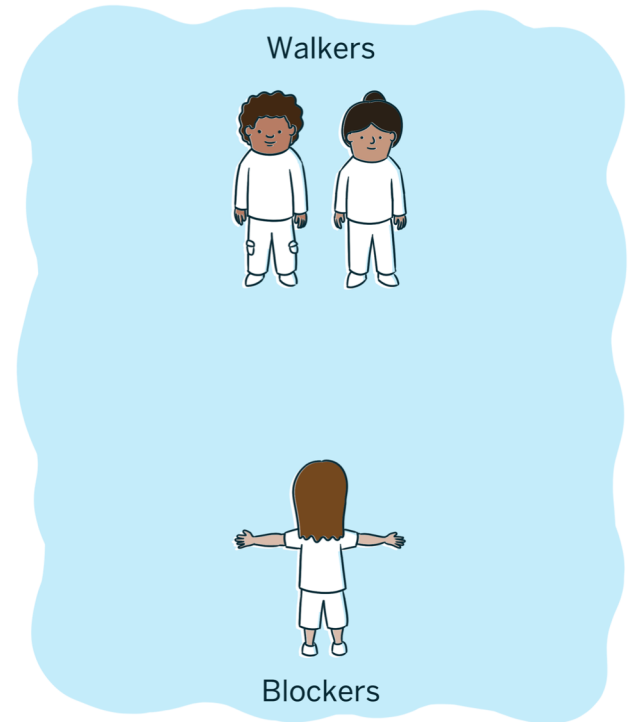
Walkers turn around and return to where they started.

Walkers

Blocking Model Part 2

1.
One student stands facing the walkers, in the middle of the area with their **arms out to either side**. This student is the **blocker.**
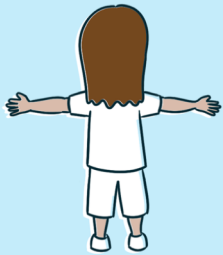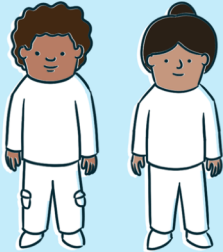
2.
Walkers walk forward again and **stop when they reach the blocker's arms.**

Walkers

Blockers

Walkers

Blockers

What teacher moves/routines could be added to support/encourage ALL students to engage with the discussion questions you see displayed on the student screen? What has worked in your classroom?

Why were the walkers able to walk to the other side of the area the first time but **not the second time**?

Key Concept

When light is blocked by an object, the surface behind the object looks dark, and we call this a shadow.

Name: _____ **Date:** _____

Shadow Cards Sorting Mat

Directions: Sort your cards into three columns.

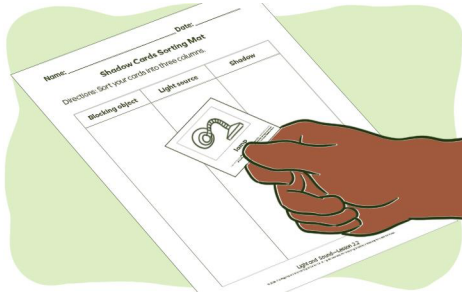| Blocking object	Light source	Shadow

Light and Sound—Lesson 2.2

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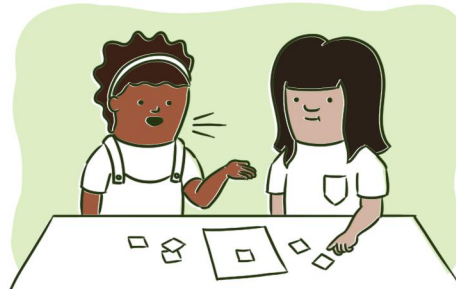
flow

lamp

You will practice **sorting** pictures into three groups: blocking object, light source, and shadow.

You will use a **mat** and **cards** like this.

Sorting Shadow Cards

1.

Choose a card. Place it on the mat and explain your thinking.

2.

Discuss with your partner whether they **agree or disagree**, and why.

3.

Switch roles.

Name: _____ Date: _____

What Made This Shadow?

Directions:
1. Choose three Shadow Cards that go together.
2. Place one card in each column.
3. Write the name of the blocking object and the light source on the lines.

Blocking object	Light source	Shadow
The _____	blocks light from the _____,	so it makes this shadow.

8   Light and Sound—Lesson 2.2

Turn to page xx in your notebooks.

Choose a set of three cards and **make a sentence** about a shadow.

Light and Sound: Puppet-Theater Engineers

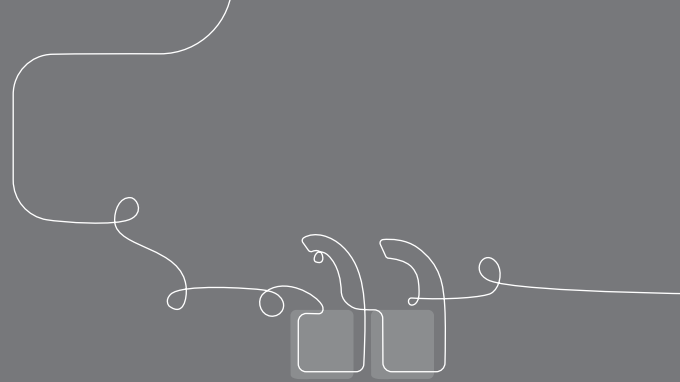|	
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Explanation that students can make to answer the Chapter 2 Question	A dark area is the result of putting an object between a light source and a surface. When an object block[...] the object looks darker. This dark area is called a shadow.

Pg. XX

What are students figuring out?

Why post this key concept now?

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Turn and talk:

- Why do you think the key concept was posted at this point in the chapter?

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Engaging with ideas over multiple activities

- Supports all learners
- Supports making connections
- Provides different, related pieces of evidence
- Models what scientists do
- Situates concepts in a variety of contexts

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Chapter 2: How do we make a dark area in a bright puppet show scene?

⌄ JUMP DOWN TO CHAPTER OVERVIEW

Lesson 2. 1:
Exploring Shadows

Lesson 2. 2:
What Made This
Shadow?

Lesson 2. 3:
Investigating
Blocking

Lesson 2. 4:
Designing a Cutout
to Make a Dark Area

Lesson 2. 5:
Explaining the Dark
Part of the Surface

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foam

tinted plastic

foil

wax paper

cardboard

clear plastic

To figure out what we can use to block light, we are going to **test** some different **materials** that may or may not block light.

How could we **investigate** with these materials to figure out if they block light?
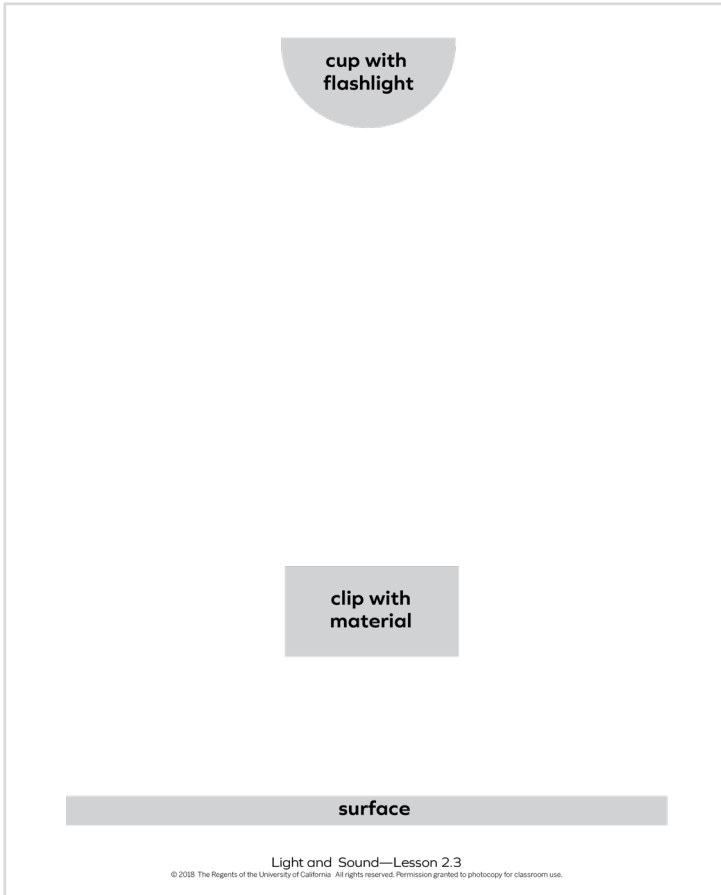
Vocabulary

material

what something is made of

Engineers **test** materials before they use them. Testing means to try something and find out what happens.

One of the things that engineers do when they test is to **keep everything the same**, except for the thing they are testing.

cup with flashlight

clip with material

surface

Light and Sound—Lesson 2.3
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You will place this **Investigation Mat** on the table and use it to set up your other materials.

Each time we **investigate**, we will follow these steps to get ready to investigate.

This way, the setup is the **same** each time we test a material.

Name: _____ Date: _____

Testing Materials

Directions:

1. For each material, circle **Yes** if the material blocked light or circle **No** if the material did not block light.

Material	Did the material block light?
cardboard	Yes No
clear plastic	Yes No
foam	Yes No
foil	Yes No
tinted plastic	Yes No
wax paper	Yes No

10   Light and Sound—Lesson 2.3

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We will record our results on page xx in our notebooks.

We have evidence the **foam blocks light**, so we can circle **Yes** in the foam row.
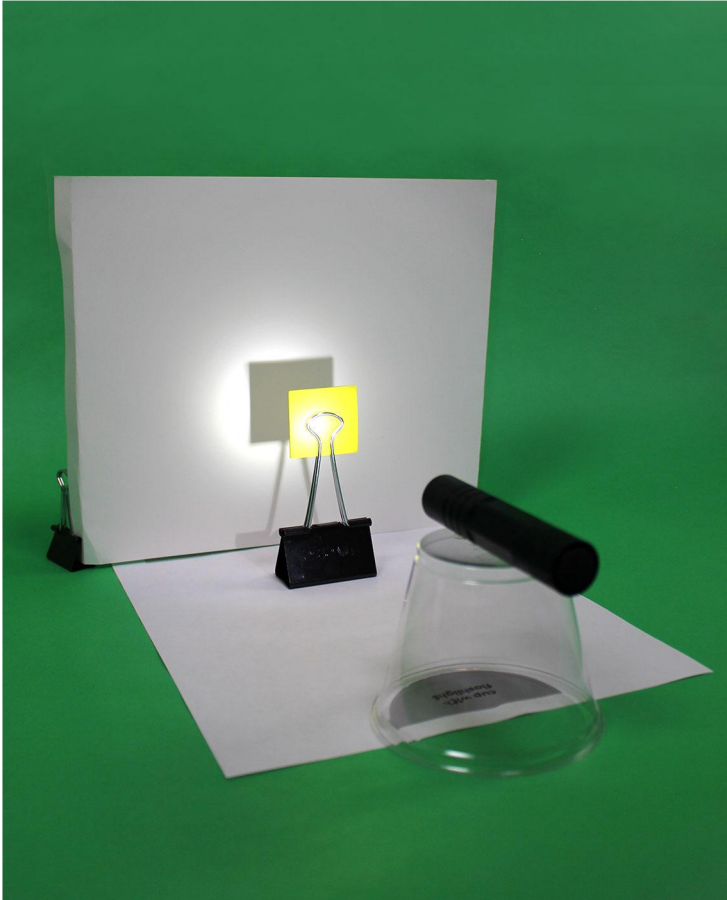
Turn to **page xx** in your notebooks.

Set up your Investigation Kit and **test your materials**.

Record your results.

Materials

| blocks light | not sure | does not block light |

foam

We will use the **Materials chart** to talk about the **results** of our investigation.

Let's start by reviewing the materials we tested.

Key Concept

When light is blocked by an object, the surface behind the object looks dark, and we call this a shadow.

Key Concept

When light is blocked by a material, the surface behind the material looks dark, and we call this a shadow.

Light and Sound: Puppet-Theater Engineers

The problem students work to solve	How can we use light and sound to design shadow scenery and sound effects for a puppet theater?
Chapter 2 Question	How do we make a dark area in a bright puppet show scene?
Investigation Question	How do we stop light from getting to one part of a surface? (2.1-2.3)

Pg. XX

- Explore how to make shadows of different shapes and sizes around the classroom (2.1)
- Use Explanation Language Frame to explain how shadows were formed (2.1)
- Draw and write engineer's notes about making shadows (2.1)
- Read What Made This Shadow? (2.2)
- Engage in kinesthetic Blocking Model to show how shadows are made by blocking light (2.2)
- Sort shadow cards (light source, blocking object, shadow) (2.2)
- Draw and write to explain how shadows in What Made This Shadow? formed (2.2)
- Investigate how different materials block light using Investigation Kits (2.3)

What are students figuring out?

Evidence sources and reflection opportunities	
Key concepts	- When light is blocked by an object, the surface behind the object looks dark, and we call this a shadow. (2.2) - When light is blocked by a material, the surface behind the material looks dark, and we call this a shadow. (2.3) (Revised from 2.2)
Application of key concepts to the problem	- Design, test, and evaluate a cutout to form a dark area in the puppet scene (2.4) - Diagram how the designed cutout blocks light in the puppet scene (2.5) - Use Explanation Language Frame and Writing Planner to explain the Chapter 2 Question (2.5)

What can we explain with these ideas?

Explanation that students can make to answer the Chapter 2 Question	A dark area is the result of putting an object between a light source and a surface. When an object block[s] ... the object looks darker. This dark area is called a shadow.

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Chapter 2: How do we make a dark area in a bright puppet show scene?

⌄ JUMP DOWN TO CHAPTER OVERVIEW

Lesson 2.1:
Exploring Shadows

Lesson 2.2:
What Made This Shadow?

Lesson 2.3:
Investigating Blocking

Lesson 2.4:
Designing a Cutout to Make a Dark Area

Lesson 2.5:
Explaining the Dark Part of the Surface

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Chapter 2: How do we make a dark area in a bright puppet show scene?

⌄ JUMP DOWN TO CHAPTER OVERVIEW

Lesson 2.1:
Exploring Shadows

Lesson 2.2:
What Made This Shadow?

Lesson 2.3:
Investigating Blocking

Lesson 2.4:
Designing a Cutout to Make a Dark Area

Lesson 2.5:
Explaining the Dark Part of the Surface

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The _____ blocks light from the _____, so

the surface looks _____.

cardboard

flashlight

Let's use these words to explain how the materials we chose made a **dark area**.

We'll start with **cardboard.**

The _____ blocks light from the _____, so

the surface looks _____.

The surface looks _____ because the _____

blocks light from the _____.

cardboard

flashlight

We made two sentences to explain how a cause and an effect are connected.

Let's think more about **cause and effect.**

Page 1:

Name: _____ Date: _____

Writing Planner: Explaining the Dark Area

Directions:
1. Circle the words for the material, the light source, and the effect.
2. Write the words that you circled on the blank lines to complete the sentence.

Material	Light source	Effect
foil foam cardboard	flashlight	 dark bright

The _____ blocks light

from the _____, so the

surface looks _____.

1

Page 2:

Name: _____ Date: _____

Writing Planner: Explaining the Dark Area (continued)

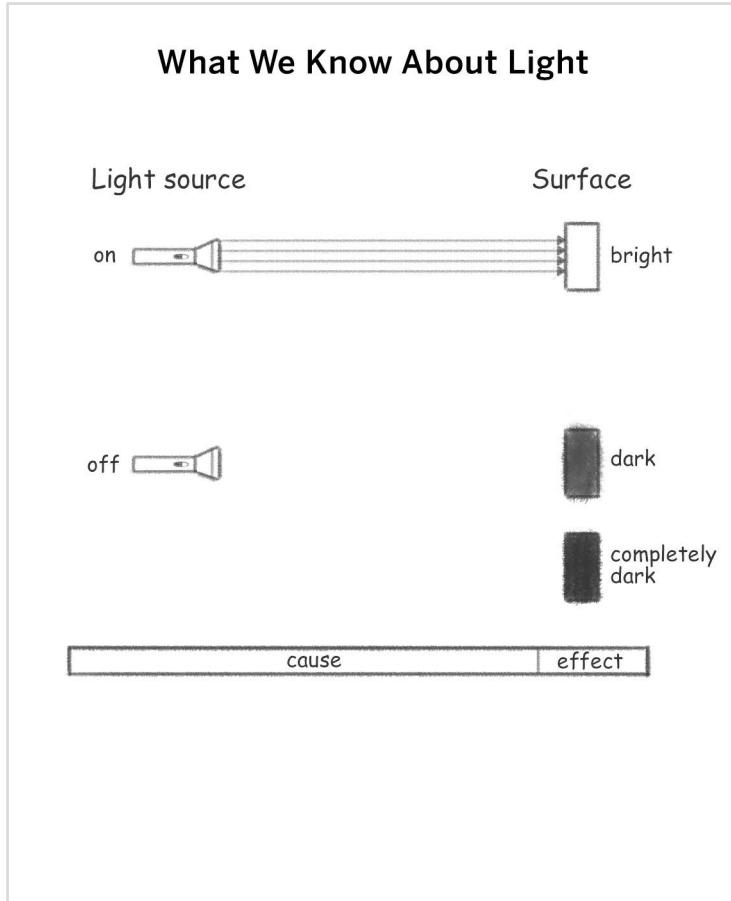| Effect	Light source	Material
 dark bright	flashlight	foil foam cardboard

The surface looks _____, because

light from the _____ is blocked

by the _____.

2

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What We Know About Light

Light source   Surface

on   bright

off   dark

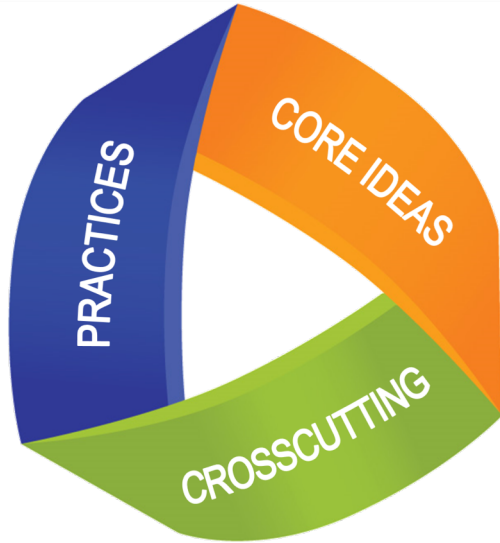   completely dark

cause   effect

We have some **new ideas** about how to make a **surface** look **dark**, even when a **light source** is shining on it.

Let's add our new learning to the chart.

Thinking three dimensionally

Disciplinary Core Ideas
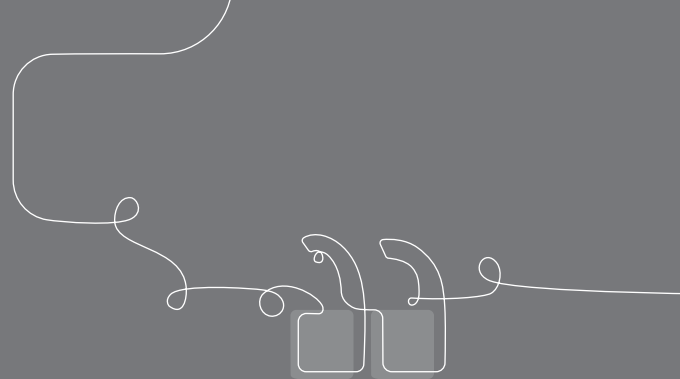
- Refer to the key concepts

Science and Engineering Practices

- Which practices did you use to figure out these ideas?

Crosscutting Concepts

- Which crosscutting concepts were useful to make sense of what you figured out?

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Questions?

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Stop and Jot on your way to lunch

Rate your comfort with the following statement from 1-4 (4 being very comfortable):
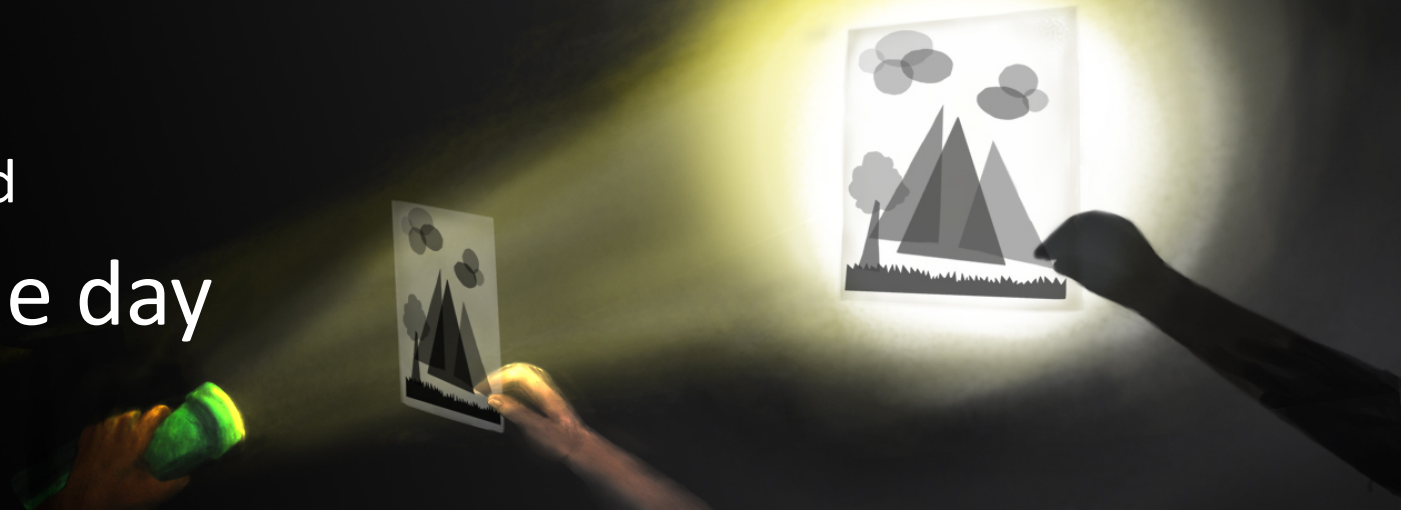I understand how activities within a lesson support students with building complex explanations.

3!

I am wondering about…

Please also note any needs or wonderings for the afternoon!

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Light and Sound

Plan for the day

- Framing and reflection
- Experiencing the unit
- The story of the unit

- Planning to teach
- Closing

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The story of the unit

The purpose of this part of the day is for you to:

- Understand how students build and apply science knowledge throughout Light and Sound.
- Apply this understanding to the End-of-Unit Assessment.
- Leverage the progress builds to gauge student understanding throughout the unit.

Amplify.
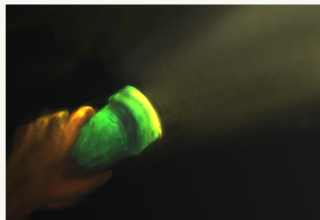
Chapter 1: How do we make brighter or darker areas?
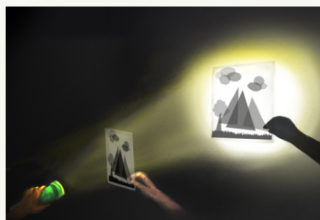
5 Lessons
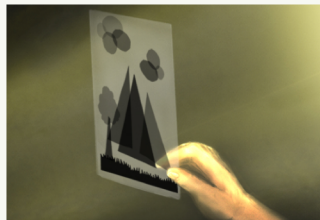
Chapter 2: How do we make a dark area in a bright puppet show scene?

5 Lessons

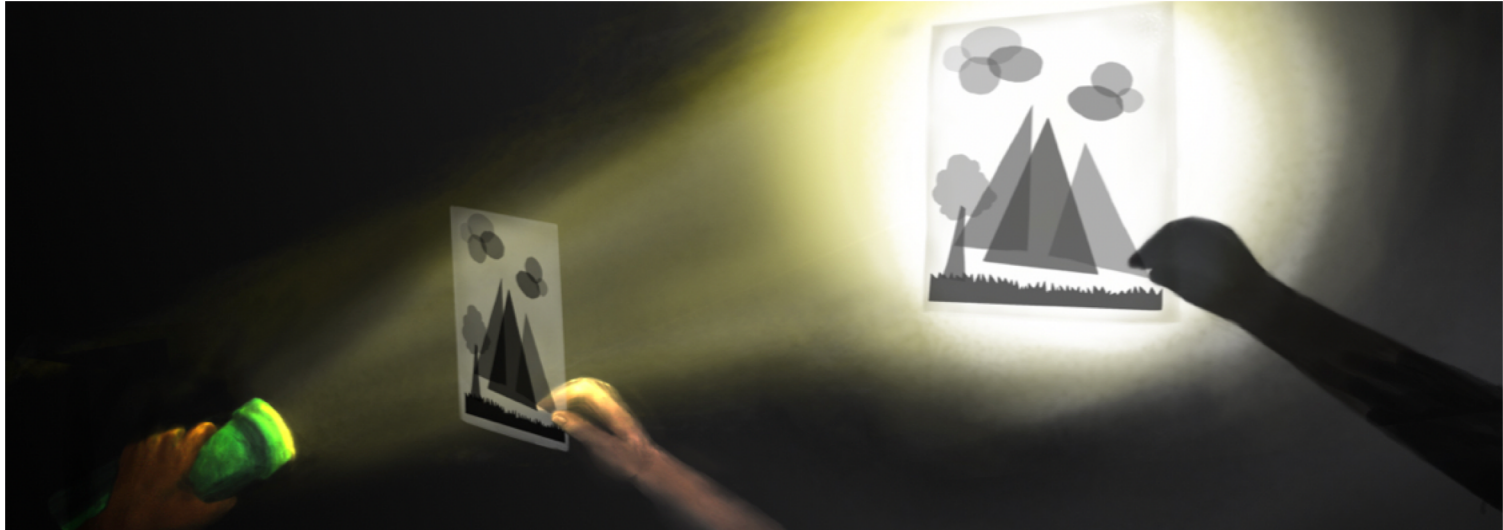**Chapter 3:** How do we make bright, medium bright, and dark areas in a...

6 Lessons

Chapter 4: How do we design a sound source to go with a puppet show scene?

6 Lessons

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Puppet scene stencil

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Chapter 2 key concepts and explanation

How do we make a dark area in a bright puppet show scene?

Ch	Key concepts	Explanation
2	When light is blocked by a material, the surface behind the material looks dark, and we call this a shadow. (2.3)	**Puppet scene:** Students decide what they would like to represent as a dark object in their puppet scene, for example, a mountain or a house. Students select an opaque material (cardboard, foam, aluminum foil) and design a cutout in the shape of the object they chose for their puppet scene.
		Explanation: A dark area is the result of putting an object between a light source and a surface. When an object blocks a light source, the surface behind the object looks darker. This dark area is called a shadow.

Students select materials that will block light

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Chapter 2 key concepts and explanation

How do we make a dark area in a bright puppet show scene?

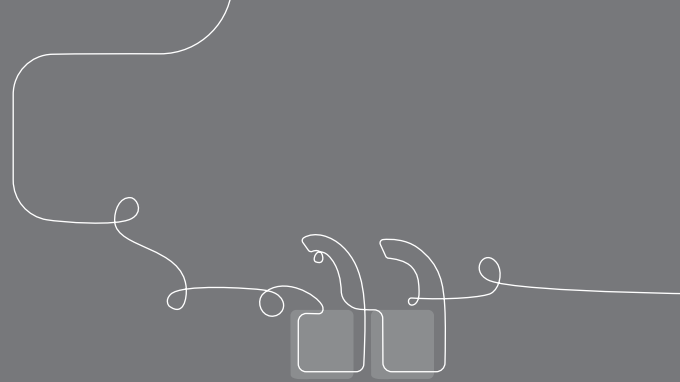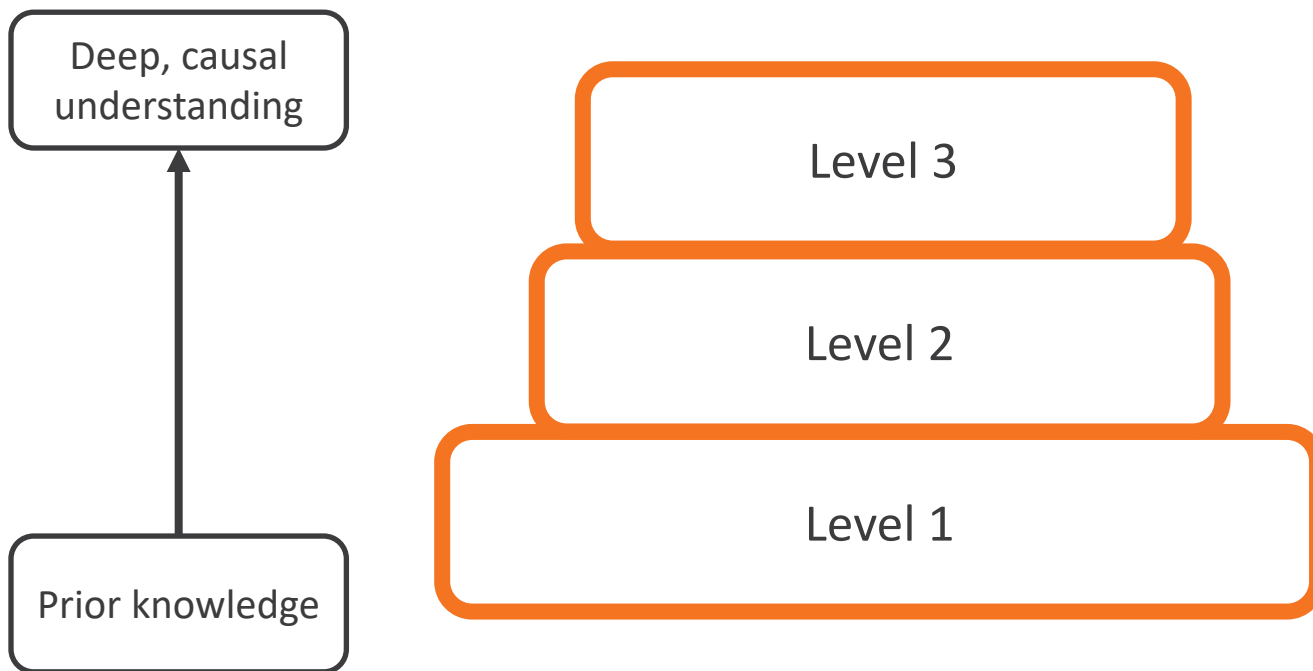| Ch	Key concepts	Explanation
2	When light is blocked by a material, the surface behind the material looks dark, and we call this a shadow. (2.3)	**Puppet scene:** Students decide what they would like to represent as a dark object in their puppet scene, for example, a mountain or a house. Students select an opaque material (cardboard, foam, aluminum foil) and design a cutout in the shape of the object they chose for their puppet scene. **Explanation:** A dark area is the result of putting an object between a light source and a surface. When an object blocks a light source, the surface behind the object looks darker. This dark area is called a shadow.

Explaining how light is blocked

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Turn and talk:

- How does formalizing conceptual understanding by posting key concepts support students in solving the unit problem?

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Ch	Key concepts	Explanation
1	Light makes things look bright. (1.2) You need some light to see. (1.2) All light comes from a source. (1.4) When light from a source gets to a surface, the surface looks bright. (1.5)	**Puppet scene:** Students consider how they would make a specific surface bright for the puppet company. They show how they can shine a flashlight on a wall to make the wall look brighter. **Explanation:** Without light, we cannot see. Light comes from a source and travels to a surface. Light from the source must be getting to the surface in order to make some parts of the surface look bright. If there is no light source, a surface looks dark.
2	When light is blocked by a material, the surface behind the material looks dark, and we call this a shadow. (2.3)	**Puppet scene:** Students decide what they would like to represent as a dark object in their puppet scene, for example, a mountain or a house. Students select an opaque material (cardboard, foam, aluminum foil) and design a cutout in the shape of the object they chose for their puppet scene. **Explanation:** A dark area is the result of putting an object between a light source and a surface. When an object blocks a light source, the surface behind the object looks darker. This dark area is called a shadow.

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Progress Build: A unit-specific learning progression

Deep, causal understanding

↑

Prior knowledge

Level 3

Level 2

Level 1

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In your group take turns sharing...

- Which ideas are revisited over multiple chapters? (started as foundational but built upon throughout your model?)
- What new ideas are added in each level of your build? (how did you represent new ideas in your model?)

Listening group:

-Listen for what is the same or different about the other group's visual to your own.

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Light and Sound Progress Build

Deep, causal understanding

Prior knowledge
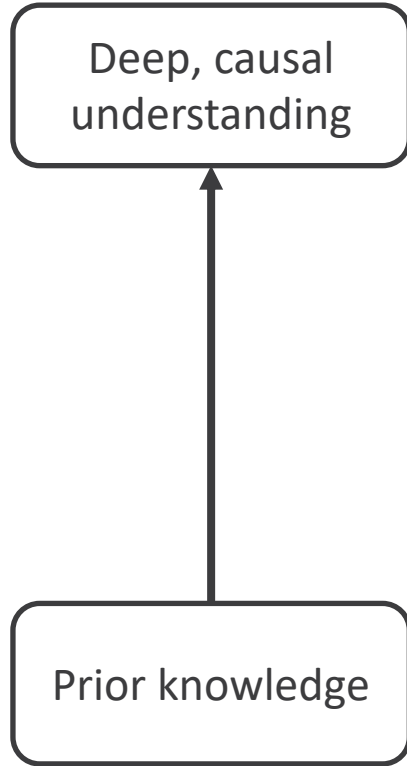
Some materials allow all or some light to pass through them.

Some materials can block light from reaching a surface.

Light from a source makes surfaces visible and look brighter.

Amplify.
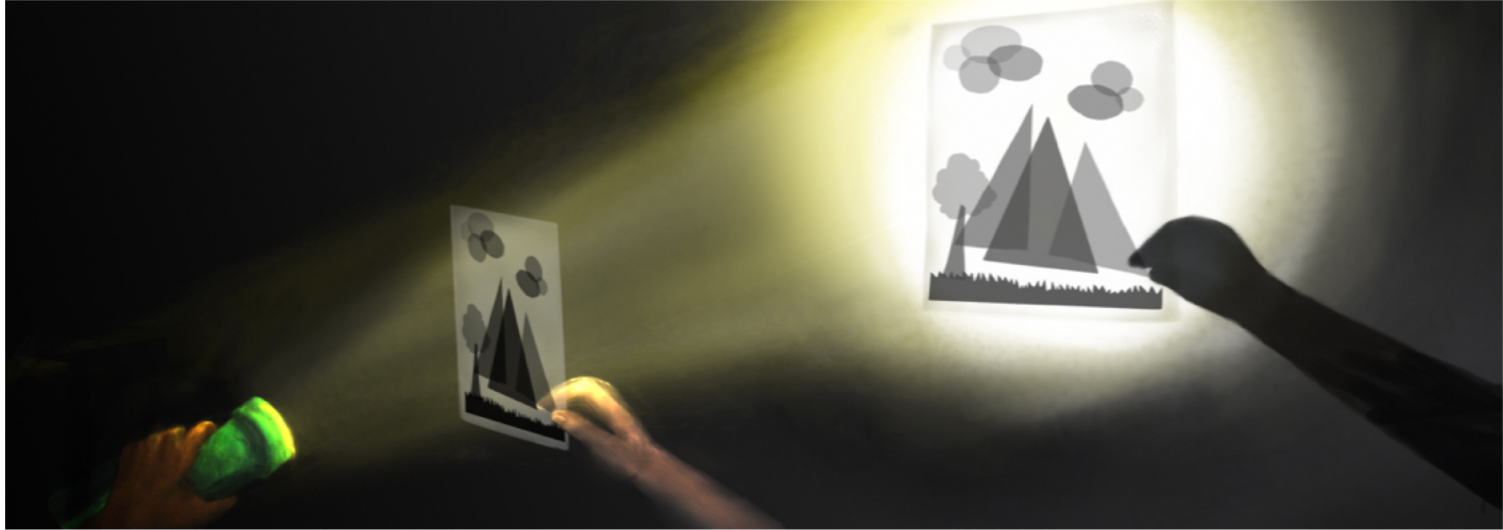
End-of-Unit Assessment

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Anticipatory turn and talk

Reflect on the End-of-Unit Assessment in your last unit

- What kind of data did you gather from the End-of-Unit Assessment?
- What did you like about the End-of-Unit Assessment?
- What did you find challenging about the End-of-Unit Assessment?

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Puppet scene stencil

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Opportunities to monitor progress

What other embedded assessment opportunities can you use to help monitor progress up the Progress Build before students get to the End-of-Unit Assessment?

- Find the Critical Juncture opportunities and add these to your visual.
- Next, locate at least one On-the-Fly Assessment that can be used to progress monitor students' developing conceptual understanding leading up to each Critical Juncture.
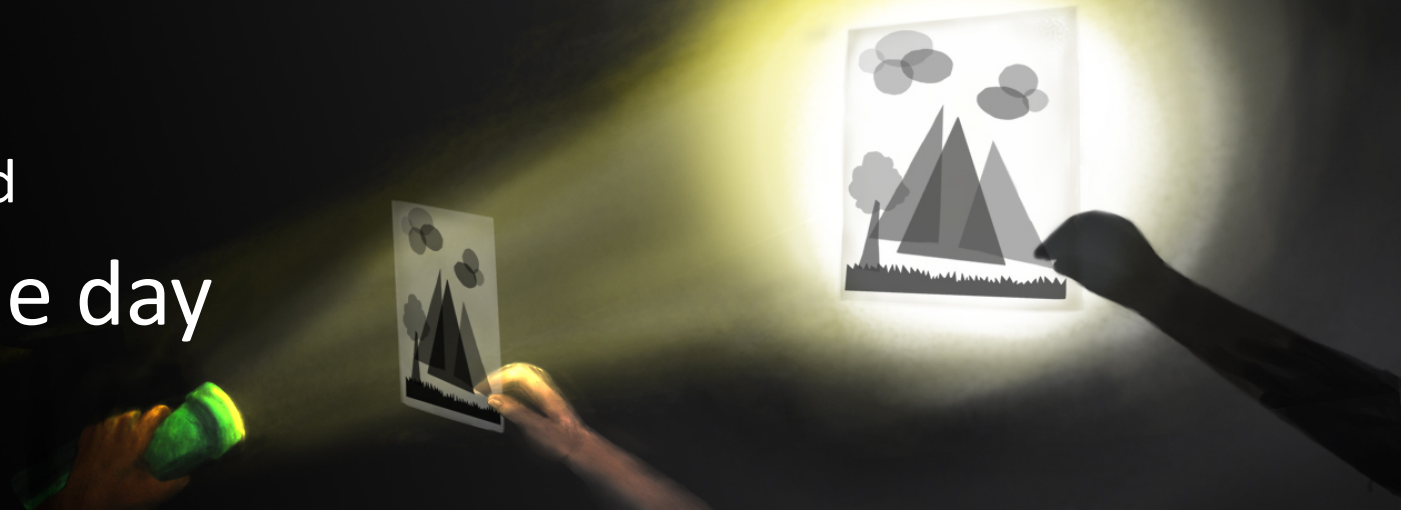
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Reflective turn and talk

Revisit these ideas

- What kind of data can you gather from End-of-Unit Assessments?

- What do you like about End-of-Unit Assessments?

- What do you find challenging about End-of-Unit Assessments?

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Light and Sound

Plan for the day

- Framing and reflection
- Experiencing the unit
- The story of the unit

- Planning to teach
- Closing

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Planning to teach

The purpose of this part of the day is for you to:

- Reflect on implementing Amplify Science in your classroom to select an area of growth.
- Engage in targeted small group practice in your area of growth.

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Targeted small group work focus areas

- Deepening content understanding and addressing preconceptions
- Coherent instruction
- Formative assessment and differentiation
- Preparing to teach

Pg.
xx

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Choosing a focus area

- While thinking about what to focus on, ask yourself:
    - For which category (1, 2, or 3) did I mark myself as "least comfortable"?
    - Did that change over the course of today's workshop?
    - Is there a newly illuminated challenge area that I would rather focus on?
    - What would be most helpful to examine collaboratively in this space?

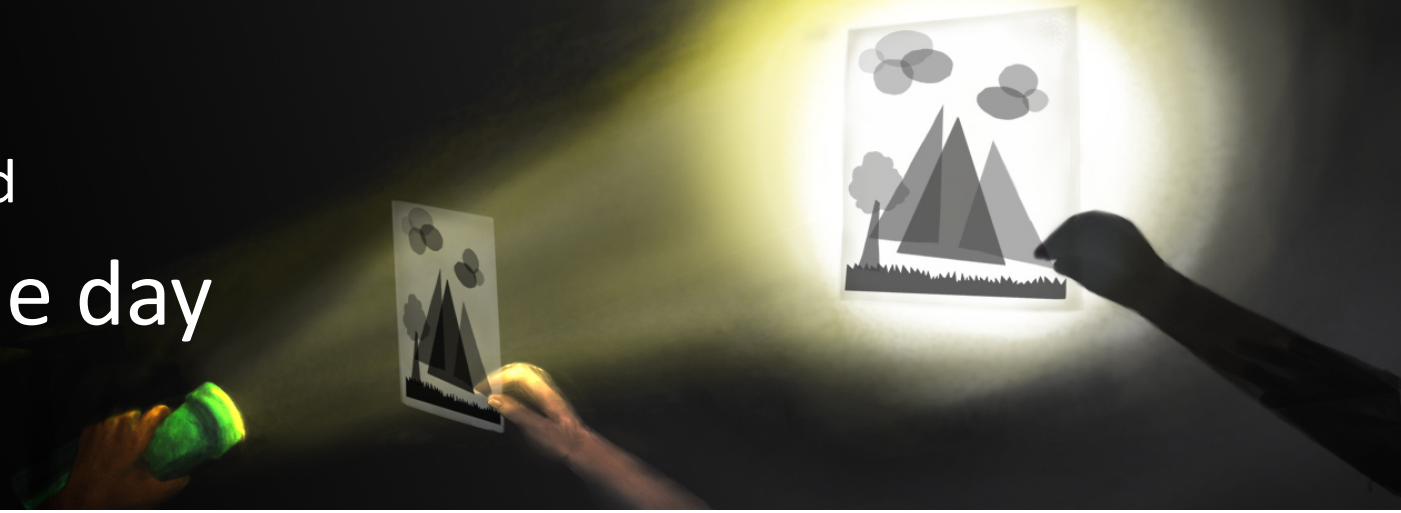Amplify.

Setting up your targeted group work

- With your group determine your focus or goal for the work time. Be prepared to share what you focused on, what you learned, and any remaining questions for the presenter.

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Focus area reflection

- Based on your work in your focus area, what will you keep in mind as you plan to teach your next unit?
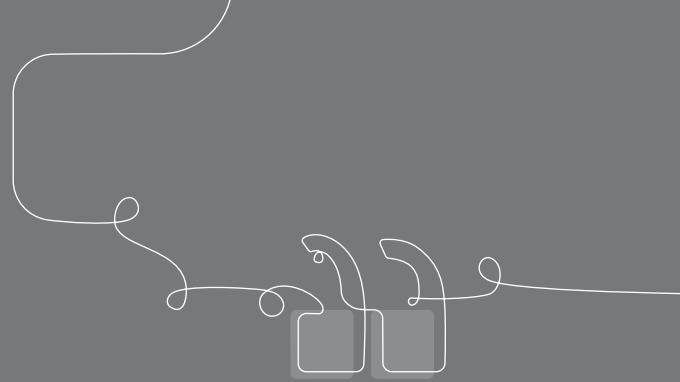
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Light and Sound

Plan for the day

- Framing and reflection

- Experiencing the unit

- The story of the unit

- Planning to teach

- Closing

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Questions?

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NYC Resource Site

https://www.amplify.com/amplify-science-nyc-doe-resources/

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Introduction

Getting started resources

Planning and implementation resources

Admin resources

Parent resources

Professional learning resources

Questions

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Missing Materials

- Contact the Core Curriculum Service Center Monday-Friday 8am-5pm

  Email: curriculum@schools.nyc.gov

  Phone: (718) 935-3334

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Thank you for your feedback!

Presenter Name:
Workshop Title:

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