



Marietta City Schools

District Unit Planner

Grade 1 Science

Theme

Unit 2 Light and Sound

Unit duration

8 weeks

Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): *What will students learn?*

#### GSE Standards

**S1P1. Obtain, evaluate, and communicate information to investigate light and sound.**

- a. Use observations to construct an explanation of how light is required to make objects visible.
- b. Ask questions to identify and compare sources of light.
- c. Plan and carry out an investigation of shadows by placing objects at various points from a source of light.
- d. Construct an explanation supported by evidence that vibrating materials can make sound and that sound can make materials vibrate.
- e. Design a signal that can serve as an emergency alert using light and/sound to communicate over a distance

**Unit Objectives:**

Students will investigate how light can be produced from different sources.

Students will understand that in order to see objects we need light.

Students will investigate ways in which shadows change according to where an object is placed in relationship to the light source.

Students will experience sound caused by vibrations.

Students will communicate using light and sound.

**Unit Phenomena:**

Light - Turn off the lights in the classroom. Shine a flashlight on the front of the room. Ask students what they notice and wonder. Record their thoughts on a T-chart.

Sound – put a piece of wax paper on a radio, cell phone, or any kind of speaker. Put some grains of rice on the waxed paper. Turn up the sound and watch what happens to the rice. Ask students what they notice and what they are wondering.

**Page Keeley Probes:** [Click here for an introduction on Page Keeley Probes.](#) These probes are a perfect way to introduce a topic. They are intended to elicit student understanding about science concepts. Starting a unit or lesson with a probe will help you uncover misconceptions and see what students already know about a topic. Using a probe at the beginning of a

lesson and then at the end of the lesson serves the purposes of pretesting and then formatively evaluating student thinking. Below is a list of probes from Page Keeley’s book *Uncovering Student Ideas in Primary Science*, that are appropriate for this unit. This book has been purchased for your grade level by the Office of Academic Achievement and can be found in your media center.

- **When is My Shadow the Longest?**

<p><b>Science &amp; Engineering Practices:</b></p> <ul style="list-style-type: none"> <li>• Asking questions and defining problems</li> <li>• Planning and carrying out investigations</li> <li>• Developing and using models</li> <li>• Analyzing and interpreting data</li> <li>• Constructing explanations and designing solutions</li> </ul>	<p><b>Disciplinary Core Ideas:</b></p> <ul style="list-style-type: none"> <li>• Sound can make matter vibrate, and vibrating matter can make sound.</li> <li>• Light is needed to see.</li> <li>• Sources of light</li> <li>• Light and sound are used to communicate</li> </ul>	<p><b>Crosscutting Concepts:</b></p> <ul style="list-style-type: none"> <li>• Patterns</li> <li>• Cause and Effect</li> <li>• Energy and Matter</li> </ul>
--	--	--

**Misconceptions:**

Pitch is equal to volume (loudness)

You see and hear an event at the same time.

The pitch of whistles or sirens on moving vehicles is changed by the driver as the vehicle passes.

Shadows vanish on a cloudy day because the Sun is not bright enough.

The Sun is not out on a cloudy day.

**Math/ELA Connections/STEM Connections**

ELAGSE1SL1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others’ talk in conversations by responding to the comments of others through multiple exchanges. c. Ask questions to clear up any confusion about the topics and texts under discussion.

ELAGSE1SL2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.

ELAGSE1SL3 Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood. ELAGSE1SL4 Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.

ELAGSE1SL5 Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.

ELAGSE1SL6 Produce complete sentences when appropriate to task and situation. (See grade 1 Language standards 1 and 3 for specific expectations.)

MGSE1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

STEM: Students stretch four rubber bands around, over, or across a shoebox and tune them to different pitches by adjusting the strings' tensions and lengths. To maximize volume, they design an instrument that transmits vibrations well whenever a string is plucked. Finally, they work in pairs to tune their instruments and play a melody.

[Science Buddies](#)

**Picture Perfect STEM Lessons, K-2** - Chapter 9 Feel the Heat

**Even More Picture-Perfect STEM Lessons, K-2** – Chapter 10 Sound All Around

**Discovery Education Science Techbook Resources:** (You will need to be logged into Discovery Education using your Google credentials to access these resources) You will find center activities on the **Engage** page of each Techbook unit.

[Light](#)

[Making Sounds](#)

**GPB Resources** – Each of these resources includes video clips, student sheets, and student activities.

[Sound Safari](#)

[Sound Vibrations](#)

#### **Hands-on Activities**

[STEM Project - How far can you see?](#)

[Make your own Instrument](#)

[Bottle Music Activity](#)

[Shadows Virtual Lab](#)

[Telephones](#)

[High Touch High Tech in-school Field Trips](#)

### **Essential Questions**

#### **Factual—**

List different sources of light and explain how they differ.

What happens when light shines on different types of material?

What causes shadows?

<p><b>Inferential—</b></p> <p>What conditions affect the size and shape of shadows?</p> <p>What would cause a bear to not see his shadow at all?</p> <p><b>Critical Thinking-</b></p> <p>How can the shape and size of shadows be changed?</p> <p>How can light and shadows be used to communicate?</p>	
<b>Tier II Words-</b> High Frequency Multiple Meaning	<b>Tier III Words-</b> Subject/ Content Related Words
source, material, sound, soft, emergency alert, signal	invisible, shadow, light, visible, vibration
<p>Making Sounds Discovery Education Science Techbook Constructed Response</p> <p>Light Energy Discovery Education Science Techbook Constructed Response I</p> <p>Light Energy Discovery Education Science Techbook Constructed Response II</p>	

Objective or Content	Learning Experiences	Differentiation Considerations
S1P1. Obtain, evaluate, and communicate information to investigate light and sound.	<a href="#">What's that sound? Do you see what I see? GaDOE 5E Instructional Segment</a> This 5E segment will introduce students to light and sound. They will use various objects to investigate light and sound, understanding that objects that vibrate produce sound. Sounds and lights are also used to alert people.	Student Choice Performance Tasks Reflection and Goal Setting Learning Stations Choice Boards Formative Probes

	<p><a href="#">Investigating Sound Stations</a>  Students visit four stations to investigate how not only that vibrations make sound, but also that sound makes vibrations.</p>	Science Journaling Multi-sensory activities Assistive Technology Flexible Grouping Multiple Means of Representation
--	---	---

**Recommended High Quality Complex Text By Lexile Band**

- How Sound Moves* by Sharon Coan
- What Are Light Waves?* By Robin Johnson
- What Are Sound Waves?* By Robin Johnson
- How Does Sound Change?* By Robin Johnson
- What Are Shadows and Reflections?* By Robin Johnson
- The Energy We See: A Look at Light* By Jennifer Boothroyd
- Loud or Soft? High or Low?: A Look at Sound* By Jennifer Boothroyd
- Do You Really Want to Yell in a Cave?: A Book About Sound* by Daniel D. Maurer