Unit 2: Light and Sound

Unit #:	APSDO-00034879	Duration:	10.0 Lesson(s)	Date(s):	

Team:
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Grades:
1
Subjects:
Science

Unit Focus

In this unit, students will develop the understanding of the relationship between sound and vibrating materials, as well as between the availability of light and ability to see objects. The idea that light travels from place to place can be understood by students at this level through determining the effect of placing objects made with different materials in the path of a beam of light. Students will explore how vibrating matter can create sound and vice versa through hands-on learning experiences. Summative assessments include a performance task and a written component that assesses mastery of content and skills. Supporting instructional materials may include related mentor text(s), online and print resources, and teacher generated inquiry tasks.

Stage 1: Desired Results - Key Understandings

Established Goals

Next Generation Science Standards (DCI)
Science: 1

- Objects can be seen if light is available to illuminate them or if they give off their own light. *PS4.1.B1*
- People also use a variety of devices to communicate (send and receive information) over long distances. *PS4.1.C1*
- Some materials allow light to pass through them, others allow only some light through and others block all the

Transfer

T1 (T1) Integrate knowledge from a variety of disciplines and apply it to new situations to make sense of information, formulate insightful questions, and/or solve problems.
T2 (T2) Design an investigation or model using appropriate scientific tools, resources, and methods.

Meaning

Understandings	Essential Questions
U1 (U488) People use light and sound to communicate. **U2** (U476) Vibrating matter can create sound and vice versa.	**Q1** (Q484) How is sound created? How does it travel? Why do some people/animals hear sounds and not others? **Q2** (Q485) How does light allow me to see?

light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam. *PS4.1.B2* • Sound can make matter vibrate, and vibrating matter can make sound. *PS4.1.A1*	**U3** (U477) Objects can be seen if light is available to illuminate them or if they give off their own light. **U4** (U478) Some materials (e.g., mirrors) reflect light, some allow light to pass through, while others block light and create shadows. **U5** (U921) Scientists use good experimental design and laboratory techniques that lead to precise and accurate data. **U6** (U940) Conclusions can only be as strong as the quality and quantity of the evidence and analyses on which they are based.	**Q3** (Q486) Why do we see shadows in some places and not others? **Q4** (Q487) How do I communicate without words or pictures? **Q5** (Q913) How can I use science to figure out the answer, solve a problem, or design a solution? **Q6** (Q487) How do I communicate without words or pictures? **Q7** (Q488) How does information travel over long distances?
	Acquisition of Knowledge and Skill	
	Knowledge	**Skills**
	K1 Some materials allow light to pass through them (transparent), others allow only some light through (translucent), and others block all the light (opaque) **K2** A shadow is made when light is blocked by an opaque object **K3** A communication device is a piece of equipment that can use light and/or sound to send a message (e.g., fire truck, siren, alarm, a ringing phone, a lighthouse)	**S1** Manipulate a beam of light and/or materials to make an object more or less visible **S2** Redirect a light beam with a mirror **S3** Explain how vibrating materials make sound and how sound makes materials vibrate (e.g., powerful speakers can make a house shake, hitting a triangle and hand vibrates; tuning fork) **S4** Build a working model where sound can travel **S5** Give examples of the amount of light in certain places and varying times, (e.g., a pinhole box, nighttime, a pitch black closet)

		S6 Design a tool that uses light and another tool that uses sound that communicates a message.