

# Unit: Light and Sound

Content Area: **Science**  
Course(s): **Science - Grade 1**  
Time Period: **5 weeks**  
Length: **5 Weeks**  
Status: **Published**

## Unit Overview

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Students play a game in which they try to identify an object they can only see part of. They watch videos of dark places to see how light helps us see things. Then they write a story about visiting a dark place. Students test what happens when they place different materials in the path of a beam of light. Students learn that one object can make different shadows. Then they plan a shadow puppet show. The show has two “shadow” characters, but they can only use one puppet! Students form a garage band and make sounds with different instruments. Their garage band performs on stage. Then they show how sounds make other objects vibrate.

Students find out if sound from a tuning fork can travel through yarn. Then they plan their own investigations to test whether other sounds can travel through yarn. Students create a secret code that uses light or sound to send a message across a room. They use the code to play a game similar to Simon Says.

## Transfer

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- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
- Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question.
- Use tools and materials provided to design a device that solves a specific problem

## Meaning

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## Understandings

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Students will understand that...

- Light helps you see.
- Light travels.
- Light makes shadows.

- Sounds are made.
- Sound travels.
- People use light and sound to send messages.

### **Essential Questions**

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Students will keep considering...

- How does light help you see?
- How does light travel?
- How are shadows made?
- How is sound made?
- How does sound travel?
- How do people use light and sound to send messages?

### **Application of Knowledge and Skill**

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#### **Students will know...**

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Students will know...

- Light helps you see.
- Light travels.
- Light makes shadows.
- Sounds are made.
- Sound travels.

- People use light and sound to send messages.

### **Students will be skilled at...**

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Students will be skilled at...

- Constructing explanations and designing solutions.
- Planning and carrying out investigations.

### **Academic Vocabulary**

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- light
- mirror
- shadow
- sound
- vibrate
- echo
- message

### **Learning Goal 1 - Lesson 1**

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Make observations to construct an evidence-based account that objects can be seen only when illuminated.

- Make observations to construct an evidence-based account that objects can be seen only when illuminated.

SCI.1-PS4-2

Make observations to construct an evidence-based account that objects can be seen only when illuminated.

### **Target 1 - Lesson 1**

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Objects can be seen if light is available to illuminate them or if they give off their own light.

- Objects can be seen if light is available to illuminate them or if they give off their own light.

### **Target 2 - Lesson 1**

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Make observations to construct an evidence-based account to support the objects can only be seen when light is available.

- Make observations to construct an evidence-based account to support the objects can only be seen when light is available.

## **Learning Goal 2 - Lessons 2 & 3**

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Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.

- Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.

SCI.1-PS4-3

Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.

## **Target 1 - Lesson 2**

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Describe how light travels in a straight line.

- Describe how light travels in a straight line.

## **Target 2 - Lesson 2**

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Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach.

- Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach.

## **Target 3 - Lesson 2**

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Demonstrate how mirrors can be used to redirect a light beam.

- Demonstrate how mirrors can be used to redirect a light beam

## **Target 4 - Lesson 3**

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Explain how objects can block light to form a shadow.

- Explain how objects can block light to form a shadow.

## **Target 5 - Lesson 3**

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Investigate the types of shadows produced by the sun.

- Investigate the types of shadows produced by the sun.

### **Learning Goal 3 - Lessons 4 & 5**

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Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

- Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

SCI.1-PS4-1

Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

### **Target 1 - Lesson 4**

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Describe how sound can make matter vibrate, and vibrating matter can make sound.

- Describe how sound can make matter vibrate, and vibrating matter can make sound.

### **Target 2 - Lesson 4**

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Design simple tests to gather evidence to support or refute that vibrating matter and sound are related.

- Design simple tests to gather evidence to support or refute that vibrating matter and sound are related.

### **Target 3 - Lesson 5**

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Explain how sound travels.

- Explain how sound travels.

### **Target 4 - Lesson 5**

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Make inferences about how sound travels through different materials.

- Make inferences about how sound travels through different materials.

### **Target 5 - Lesson 5**

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Demonstrate how sound bounces off an object to create an echo.

- Demonstrate how sound bounces off an object to create an echo.

## **Learning Goal 4 - Lesson 6**

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Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

- Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

SCI.1-PS4-4

Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

## **Target 1 - Lesson 6**

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People also use a variety of devices to communicate (send and receive information) through light and sound.

- People also use a variety of devices to communicate (send and receive information) through light and sound.

## **Target 2 - Lesson 6**

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Compare the types of devices used to communicate by light and sound.

- Compare the types of devices used to communicate by light and sound.

## **Target 3 - Lesson 6**

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Model a variety of devices used to communicate.

- Model a variety of devices used to communicate.

## **Formative Assessment and Performance Opportunities**

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- TCI Lesson Game: Students test their understanding of key concepts with an educational game.
- TCI Interactive Tutorial: Students can work independently to check their understanding in a safe environment that provides instant feedback but is not graded.
- TCI Interactive Student Notebook: Students record their understanding of both the reading and activity. Review during the lesson to gauge student understanding.
- TCI Vocabulary Cards: Students check their understanding of key vocabulary terms with digital flip cards.
- Teacher observation of activities
- Supplemental teacher created performance activities as needed

## **Summative Assessment**

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TCI assessment: How does sound Travel?

## **Accommodations/Modifications**

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- Leveled Readers
- Differentiated Texts
- Small Group Instruction
- Investigation games
- Modify the Spotlight Game
- Pause the Videos to Focus on the Light
- Increase Home-School Connections
- Show How Light Moves
- Model Ways to Change the Puppet's Shadow

## **Unit Resources**

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- TCI online manual and student text books
- TCI Interactive Student Notebook
- TCI Vocabulary Cards
- TCI Teacher Material Kit
- TCI activity cards
- TCI reading further passages after each lesson

## **21st Century Life and Careers**

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CAEP.9.2.4.A.1	Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
CAEP.9.2.4.A.2	Identify various life roles and civic and work - related activities in the school, home, and community.
CAEP.9.2.4.A.3	Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.
CAEP.9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

## **Interdisciplinary Connections**

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LA.W.1.2	Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.
LA.W.1.7	Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions).

LA.W.1.8	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
LA.SL.1.1	Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.
MA.1.MD.A.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.
MA.1.MD.A.2	Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps.
MA.K-12.5	Use appropriate tools strategically.