

# Unit 03: Light & Sounds

Content Area: **Template**  
Course(s):  
Time Period: **Full Year**  
Length: **12 weeks**  
Status: **Published**

## Standards Alignment

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### New Jersey Student Learning Standards

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1-PS4	Waves and their Applications in Technologies for Information Transfer
1-PS4-1	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
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.
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.
1-PS4-2	Make observations to construct an evidence-based account that objects can be seen only when illuminated.

### Integration of Career Readiness, Life Literacies and Key Skills

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CAEP.9.2.4.A	Career Awareness
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.

### Technology / Integration of Computer Science and Design Thinking

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CS.K-2.8.1.2.AP.4	Break down a task into a sequence of steps.
CS.K-2.8.2.2.ETW.4	Explain how the disposal of or reusing a product affects the local and global environment.
CS.K-2.8.2.2.ITH.3	Identify how technology impacts or improves life.

### Interdisciplinary Connections: NJSL for ELA, Social Studies, Science and/or Math Section

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LA.RI.1	Reading Informational Text
LA.RI.1.1	Ask and answer questions about key details in a text.
LA.RI.1.2	Identify the main topic and retell key details of a text.
LA.RI.1.3	Describe the connection between two individuals, events, ideas, or pieces of information in a text.
LA.RI.1.4	Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.
LA.RI.1.5	Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.
LA.RI.1.6	Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.
LA.RI.1.7	Use the illustrations and details in a text to describe its key ideas.
LA.RI.1.8	Identify the reasons an author gives to support points in a text and explain the application of this information with prompting as needed.

## **Integration of Diversity, Equity and Inclusion; Climate Change; Informational and Media Literacy**

see Crosswalks

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

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## **Stage I: Desired Results**

## **Transfer/Overview/Rationale**

### **Transfer / Overview / Rationale**

Unit Rationale

The purpose of this unit...

This unit will develop the idea that by exploring the properties of light and sound, human beings create fun and useful things.

## **Meaning**

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## **Essential Questions**

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### Essential Questions

Mystery 1: How do they make silly sounds in cartoons?

Mystery 2: Where do sounds come from?

Mystery 3: What if there were no windows?

Mystery 4: Can you see in the dark?

Mystery 5: How could you send a secret message to someone far away?

Mystery 6: How do boats find their way in the fog?

## **Enduring Understanding/Indicators of Understanding**

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Enduring Understanding/Indicators of Understanding

- Each sound is made with a back and forth movement, called a vibration.
- Sounds are caused by an object vibrating. If a vibration stops, then the sound will stop too.
- Glass is a transparent material, it is see-through and light can pass through it.
- Objects can only be seen if they are illuminated or give off their own light.
- People use many different devices to communicate over long distances.
- Colors, lights, and sounds help us communicate over long distances. Sounds can even help us communicate when it is difficult to see.

## **Acquisition (Student Learning Objectives)**

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### **Knowledge**

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Knowledge

Students will know...

Mystery 1: how to carry out investigations exploring how to make different sounds.

Mystery 2: how to carry out investigations to explore different sounds and how they are created.

Mystery 3: how to investigate the difference between transparent, translucent, and opaque materials by sorting them.

Mystery 4: how to carry out an investigation using a Mystery Box.

Mystery 5: how to solve a by problem by designing a solution with a partner using correlating light colors for a specific message.

Mystery 6: how to obtain information about light and sound signals.

## Skills

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### Skills

Student will be skilled at ...

- Using body parts to make the sounds of a rain storm and use the vibration of an object to move another object.
- Creating three different sound makers and constructing an explanation about where the vibrations are happening.
- Understanding the difference between transparent, translucent, and opaque materials and then creating a stained glass window using tissue paper.
- Making observations to construct the explanation that objects need light to be seen.
- Designing a solution with a partner by correlating light colors to a specific message.
- Determining the difference between different types of sound.

## Stage 3: Learning Plan

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## Resource and Mentor Texts

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### Resources and Mentor Texts

- Mystery Science Online Read Alouds
- Flashlight Shadow Show – Level F (<https://www.readinga-z.com/books/leveled-books/book/?id=1825&lang=English>)
- Rainbows – Level J (<https://www.readinga-z.com/books/leveled-books/book/?id=3266&lang=English>)
- Sounds All Around by Wendy Pfeffer
- Oscar and the Moth: A Book About Light and Dark by Geoff Waring
- Light is All Around Us by Wendy Pfeffer

## Formative Assessment Strategies

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### Formative Assessment Strategies

- Ask questions based on observations to find more information about the natural and/or designed world.
- Define a simple problem that can be solved through the development of a new or improved object or tool.
- Ask questions, make observations, and gather information about a situation people want to change in order to define a simple problem that can be solved through the development of a new or improved object or tool.

- Develop a simple model based on evidence to represent a proposed object or tool.

## **Learning Activities/Unit of Study**

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### Learning Activities/Unit of Study

- attached Mystery Science Lessons 1-6

[MS 3.1](#)

[MS 3.2](#)

[MS 3.3](#)

[MS 3.4](#)

[MS 3.5](#)

[MS 3.6](#)

## **Modifications and/or Accommodations**

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### **Suggested Modifications (ELL, Sp. Ed, Gifted, At-risk of Failure)**

#### **English Language Learners**

Native language support: The teacher provides auditory or written content to students in their native language.

Adjusted Speech: The teacher changes speech patterns to increase student comprehension. This could include facing the students, paraphrasing, clearly indicating the most important ideas, and speaking more slowly.

Visuals: The teacher uses graphics, pictures, visuals, and manipulatives. This helps ELL students better understand and comprehend the subjects at hand.

Front-Loading Vocabulary: The teacher front loads vocabulary. This means providing students with a list of important vocabulary words they will need to know for a book, lesson, etc. prior to the lesson being taught. Including pictures to go with the vocabulary words is also very beneficial for the students.

#### **Special Education Students**

Chunking: The teacher presents information in a way that makes it easy for students to understand

and remember. Chunking is based on the presumption that our working memory is easily overloaded by excessive detail. The best way to deliver information is to organize it into meaningful units. Because students with special needs get overloaded easily, chunking is an effective strategy to use with them.

**Checking for Understanding:** It is important to constantly check for understanding, especially for students who have accommodations. Teachers want to make sure students understand the concepts being covered in a way that makes sense to them.

**Extra time:** The teacher provides students with special needs extra time to complete work or answer questions. It is important to give students enough time to process their thoughts.

**Oral Reading:** The teacher will read work orally to students. Class work such as tests and literature circles may need to be read aloud to the student.

**Timers:** The teacher will use timers as an instructional tool. The use of timers is beneficial for students who have trouble completing tasks. Timers can be helpful so the student is aware of how much time they have to complete an assignment.

## **Students with 504 Plans**

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## **Gifted & Talented Strategies**

**Extensions/Enrichments:** Teachers will provide gifted and talented students with extension/enrichment projects. Students will be challenged to further their understanding, to apply acquired knowledge, and/or to produce something in reference to acquired knowledge.

**Modify/Change Activities:** Teachers will monitor and modify activities to accommodate those students who need to be challenged further. Additional reading, problem-solving, writing, or project work is necessary for those students who are ready to move on at a rate more accelerated than their peers. In this way, G & T students are provided the same opportunity for support as special needs students.

## Students at Risk of School Failure

**Directions or Instructions:** Make sure directions and/or instructions are given in limited numbers. Give directions/instructions verbally and in simple written format. Ask students to repeat the instructions or directions to ensure understanding occurs. Check back with the student to ensure he/she hasn't forgotten.

**Peer Support:** Peers can help build confidence in other students by assisting in peer learning. Many teachers use the 'ask 3 before me' approach. This is fine, however, a student at risk may have to have a specific student or two to ask. Set this up for the student so he/she knows who to ask for clarification before going to you.

**Alternate or Modified Assignments:** Always ask yourself, "How can I modify this assignment to ensure the students at risk are able to complete it?" Sometimes you'll simplify the task, reduce the length of the assignment or allow for a different mode of delivery. For instance, many students may hand something in, the at-risk student may jot notes and give you the information verbally. Or, it just may be that you will need to assign an alternate assignment.

**Increase One to One Time:** When other students are working, always touch base with your students at risk and find out if they're on track or needing some additional support. A few minutes here and there will go a long way to intervene as the need presents itself.

**Contracts:** It helps to have a working contract between you and your students at risk. This helps prioritize the tasks that need to be done and ensure completion happens. Each day write down what needs to be completed, as the tasks are done, provide a checkmark or happy face. The goal of using contracts is to eventually have the student come to you for completion sign-offs.

**Hands On:** As much as possible, think in concrete terms and provide hands-on tasks. This means a child doing math may require a calculator or counters. The child may need to tape record comprehension activities instead of writing them. A child may have to listen to a story being read instead of reading it him/herself.

**Tests/Assessments:** Tests can be done orally if need be. Break tests down in smaller increments by having a portion of the test in the morning, another portion after lunch and the final part the next day.

**Seating:** Seat students near a helping peer or with quick access to the teacher. Those with hearing or sight issues need to be close to the instruction which often means near the front.