

# Educational Resources from *Phenomenon Science Education*

## Student Proficiency Goals for **NGSS 1-PS4-4**



### Information about 1-PS4-4

#### **NGSS Performance Expectation 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.\*

#### **Clarification Statement.**

Examples of devices could include a light source to send signals, paper cup and string “telephones,” and a pattern of drum beats.

#### **Assessment Limits.**

Assessment does not include technological details for how communication devices work.

#### **Science and Engineering Practice (Constructing Explanations and Designing Solutions)**

- Use tools and materials provided to design a device that solves a specific problem.

#### **Disciplinary Core Idea (PS4.C: Information Technologies and Instrumentation)**

- People also use a variety of devices to communicate (send and receive information) over long distances.

#### **Influence of Engineering, Technology, and Science, on Society and the Natural World**

- People depend on various technologies in their lives; human life would be very different without technology.

\* The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

This performance expectation does not weave in a Crosscutting Concept. Instead, it weaves in a **Connection to Engineering, Technology, and Applications of Science**, which we have identified in purple.

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Student Proficiency Goals for **NGSS 1-PS4-4**



**Student Proficiency Goals**

**SEP (Constructing Explanations and Designing Solutions):**

- Students describe a specific communication problem for people that involves communicating over distances.
- Students determine possible solutions to the problem that use light or sound and are based on tools and materials provided.
- Students use the tools and materials provided to design a device that will allow communication over distances using light or sound.
- Students follow their design and use the provided tools and materials to build a device that will allow communication over distances using light or sound.

**DCI (PS4.C Information Technologies and Instrumentation):**

- Students know that information can be transmitted using light and/or sound.
- Students know that people use different devices to communicate over distances with light and/or sound.

**Influence of Engineering, Technology, and Science, on Society and the Natural World:**

- Students consider how people communicate over long distances.
- Students consider how life would be different if humans did not have technology that allows communication over distances.
- Students consider what technologies they depend on for communication.