

# Wave Inventions: Inventors

## Light, Sound, Inventors

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| **Grade Level** | 1st Grade | **Time Frame** | 1-2 class period(s) |
| **Subject** | Social Studies | **Duration** | 120 minutes |

## Essential Question

How do inventors use science to solve problems?

## Summary

In this final lesson of the Wave Inventions series, students design a communication tool using concepts they learned in the light and sound lessons. They also explore various inventors and their inventions. Students also discuss the characteristics that make good inventors, including being problem solvers and overcoming failure.

## Snapshot

### Engage

As a class, students will read and discuss the book, "So You Want to Be an Inventor."

### Explore

Students will draw a picture of an inventor and discuss what makes their inventors different than others.

### Explain

Students will learn about a variety of inventors and the qualities that make an inventor successful.

### Extend

Students will be challenged to invent a device using light or sound to communicate through a cave.

### Evaluate

Students will present their invention to their peers.

## Standards

*Next Generation Science Standards (Grade 1)*

**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.

*Oklahoma Academic Standards (Kindergarten )*

**K.ESS3.2.2:** Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.

## Attachments

- Invention Presentation Notes.docx
- Invention Presentation Notes.pdf
- Inventor Biographies.docx
- Inventor Biographies.pdf
- Waves and Inventors- Parent Guide.pdf

## Materials

- So You Want to Be an Inventor book
- Paper and something to color with
- Inventor pictures and biographies
- Materials to create a communication tool (Use the same materials from previous lessons.)

# Engage

**Teacher's Note**

This lesson is part 3 of 3 in the Wave Inventions series. You can find part 1, Sound, here and part 2, Light, here. You can also find a Parent Guide attached to this lesson.

Read aloud the book "So You Want to Be an Inventor." In this book, students will learn about various inventors and learn about some of the challenges inventors have faced.

# Explore

On a sheet of paper, have the students draw a picture of an inventor. If students aren't sure what to draw, probe them with the following questions: "What do inventors look like? Sound like? Wear? What do they carry with them?"

In their table groups, have students determine a rule to help them sort their inventor pictures into two groups. Have each group share how they decided to divide their inventor pictures. Did they sort them by what they were wearing?

# Explain

Introduce each of the inventors in the Inventors and Biographies attachment by showing the picture and reading a short biography about the inventor. Sort pictures of inventors into two piles (transportation vs. communication), but don't describe the piles to the students just yet.

Using the Think-Pair-Share strategy, ask students to brainstorm what sort of things the inventors have in common.

Possible responses might include: solved problems, created things that we use today, made things that help people, failed before, all sorts of backgrounds, have a variety of jobs

Using Think-Pair-Share again, ask the students, "What rule did I use to create the piles?"

After discussion, explain how the inventors were sorted (communication vs. transportation). Explain to students that today they are going to be Communication Inventors.

# Extend

Give students the following challenge:

You are in a cave where it is completely dark and your voice isn't loud enough to hear from far away. Use these materials and what you have learned about light and sound to invent a tool that will help you communicate to people outside the cave.

Break students into small groups or allow students to work independently. Students can use the Invention Presentation Notes handout to help them think about and plan the design. Have them draw a picture of their tool, and allow them to build a model of the tool using various materials.

Using their tool, have students create two codes. One for "I need help" and one for "I am okay." If students have extra time, encourage them to create additional codes.

**Student Scaffold**

Using a flashlight, show students how turning on the light for two seconds looks different than two quick flashes of light. Explain that two seconds of light might mean "I am okay" and two quick flashes of light might mean "I need help."

Talk about how sounds and lights communicate. Morse code has a series of long and short sounds to create words and messages. Different colored lights mean different things in Garrett Morgan's traffic light.

# Evaluate

Have students present their tools to the class. To prepare, they should answer the following questions. They will share the answers in their presentation.

- How does your tool use sound or light to communicate?
- How does the tool solve the problem?
- What code means “I am okay?” What code means “I need help?”
- Which inventor inspired your invention and why?

## Resources


- K20 Center. (n.d.). Think-pair-share. Strategies. Retrieved from https://learn.k20center.ou.edu/strategy/d9908066f654727934df7bf4f5064b49
- St. George, J. (2005). So you want to be an inventor. Puffin Books.