Patty Calvano

Lesson Title: Communication Challenge

Level: 4th Grade

Time: 2-3, 45-min lessons

Objectives:

NGSS 4-PS4-3 Generate and compare multiple solutions that use patterns to transfer information.

NSS 4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

Materials: book: *Radio* Rescue by Lynne Barasch, circuit materials for each group: wires, D battery, battery holder, 1.5 volt lightbulb and lightbulb holder.

Procedure:

Day 1: Begin by asking students some questions: How do we share information? How do we share information if the other person is far away and the person can't hear you? How did we communicate before we had phones? Next, read *Radio Rescue* by Lynne Barasch. Use the following questions to check for understanding of Morse code: What are the sounds and symbols used when sending Morse code? What type of sound is a dot? What type of sound is a dash? Then present the challenge: How can you communicate a message to a partner without using print, sound, gestures, or lip-reading? Students will need to communicate a 1-sentence message that you will give them once they are ready to test their design. Give students the circuit materials and let students work with their partner to brainstorm solutions and begin building if time permits.

Day 2: Continue working on designs. When students are ready to test, give one student the message and then let the students use their circuit to transmit the message using the code they have developed. If students are successful, they can move to the assessment/writing portion. If not, they can continue working and then retest using a new message.

Day 3: Writing/Assessment: Students draw the circuit and label the circuit to show the transfer of energy. Writing prompt: Compare the method of communication you used with the method of communication used in *Radio Rescue.* Which was more effective and why?

Closing: Hold up a cell phone. Ask students, in what careers do people work to try to improve our phones and our communication? (Computer and software engineers, materials engineers, computer programmers)

References:

Barasch, Lynne. *Radio Rescue*. New York: Farrar, Straus and Giroux, 2000. Print.

Royce, Christine A. "Codes and Communication." *Science and Children*, 1 Dec. 2017, pp. 21-27.