

NGSS Literature Lesson Plan

Performance Expectation(s):

[4-PS4-3](#)

Generate and compare multiple solutions that use patterns to transfer information.

Literature Connection

Literature: [Jackrabbit McCabe and the Electric Telegraph](#)

ELA Connection: *Common Core State Standards Connections:*

ELA/Literacy -

RI.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information. ([4-PS4-3](#))

RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. ([4-PS4-3](#))

Lesson heavily adapted from *Top Secret* by Justin Price

Student Background Information

Prior Student Knowledge:

Pattern, code

Student Misconceptions: That information long ago was transmitted as easily as it is today.

Barriers: In order to move information across distances we use a variety of formats. At one time, sending information over long distances was a problem that had to be solved. Growing up in our ever changing world of technology makes this a particularly difficult concept to relay. Information is so easily obtained and shared now. This concept alone might be a large barrier.

Engage

Without any sort of official "Now we're starting science, and we are learning to...", I discover an envelope marked Top Secret and ask the class who it is from. With no answers from the class, I dump a flash drive into my hand, "plug" it into my computer, and "find" this video:

[Morse Code Video](#)

Materials/Resources

[Morse Code Video](#)

<p>After you have their attention return to the envelope and pull out a short article on Morse Code and/or the Telegraph and a Mystery Letter to build a little background knowledge and generate some mystery before they explore. Create an anchor chart or allow students to take notes about things they know or wonder about.</p> <p>At this point try to steer the conversation to communication. “Hmmm something is supposed to be communicated here. We might need to do some research on what this is. I wonder how else information can be communicated nonverbally?”</p> <p>Tell them you remember that in the past it was hard to communicate over distances. Ask students if they know how information was transferred during every day life, during war or emergencies. Hopefully someone will say something about horses or runners or maybe even the Pony Express. Record these ideas. If not, lead them to it. Explain we’ve had many advances since then and we’re going to read a quick story about one of the first communication upgrades from the past. Read the book checking for understanding and asking questions along the way.</p> <p>Next, I ask students to guess or predict what my nonverbal signs communicate. Try to use any you already might use in your school or classroom. Then I show students several signs like tapping my head and holding up three fingers, flashing a light on and off several times (like in a car too), train whistle with two long sound and 2 short sounds. I then tell students that those could all be ways for saying hello or good morning.</p> <p>I then ask students to think of different ways they can say hi to their friends. Some examples are: Hey, Good Morning, Howdy, showing a friendly smile, friendly wave, sign language for hi, head nod, high five, etc. Then I lead a brief discussion about how we can use different signs and signals to communicate over a distance. Do they have any questions or wonders about nonverbal communication or when it might have been used or what might have been used? Record these ideas.</p>	<p>Mystery Letter</p> <p>Telegraph (to project)</p> <p>Telegraph (to print)</p> <p>Morse Code (to project)</p> <p>Morse Code (to print)</p> <p>Read Aloud</p>
<p>Explore</p>	
<p>Bring students back to Morse Code and say you’re all going to explore a little today about the concept of using codes over distance. You could then select a word and demonstrate with a flashlight that particular word. It’s important for students to</p>	<p>Materials/Resources</p>

<p>understand Morse Code can be both auditory or visual. YOu can provide them with many other online videos showing both kinds of examples.</p> <p>Pass out the explore sheet and allow students to orient themselves with Morse Code and the idea of it communicating information through a well known pattern.</p> <p>Allow them time to practice the code. Once they are able to send a basic message in Morse code, they will work with their groups to develop a new code that has to use another material. Some ideas include different colored pieces of paper, small paper flags, hand signals, cheap lights, etc. Expect them to use the ideas behind Morse code, just make sure they go beyond substituting long for one color and shorts for another.</p> <p>You could even extend this activity and have them create a video on Flip demonstrating their entire alphabet.</p>	<p>Explore Sheet</p> <p>Flip</p>
<p>Explain</p>	
<p>Once they have their alphabet worked out, encourage them to practice sending and receiving a few messages. When they are sure they are ready, have the sender in each group choose an index card with a name written on it from your previous made pile. Their final “test” is to successfully transmit that name to their partner who is at least 10 feet away.</p> <p>For assessment, make this a performance task. If they are able to send and receive the message successfully, they earned 4 points, 3 if they made some errors in the sending and receiving, and 2 if they weren't able to develop a code.</p> <p>Continued Next Day?</p> <p>Explain to students there are other ways humans have learned to communicate in the past. They will explore the various ways people communicated and complete the Comparing Codes assignment. Once students are knowledgeable on the different forms they will answer assessment questions in writing or on a Flip. In order to make the second ELA connection you will need students to find two sources to help them report factually on their particular mode of communication. Can be written or spoken to satisfy standard.</p>	<p>Materials/Resources</p> <p>Index cards with names already on them materials to make student code paper popsicle sticks cheap lights</p> <p>Comparing Codes Possible Answers</p> <p>Flip Writing</p>

