Grade 4 - Insulators and Conductors

Time: 20 minutes

Overview:

- Students view an energy ball and try to determine how it lights up and makes a sound.
- Students see a set-up of a series circuit observing when the circuit is open and when it is closed.
- Students then are given a list of materials. They are asked to predict if the material will allow electric current to flow through (a conductor) and light the bulb or if they will not allow electric current to flow through (an insulator).
- Students use the observations they made to complete a Claim-Evidence-Reasoning (C-E-R) answering the question; how and why does an energy ball light up when you touch the sensors.

Lesson:

The Insulators and Conductors activity is presented via a YouTube video. The link below should be provided to students, so they can view and follow along with the activities.

- Insulators and Conductors Presentation Video (8:58 minutes on YouTube)
- Optional Assignment:
  - Energy Ball CER

Extensions:

These are provided to students for more information.

- Electricity For Kids from Discovery Kids
  - Reinforcement of conductors and insulators
  - Assignment - Complete the quiz on the website.
- Conductors and insulators (2:23 minutes on YouTube)
  - Boy narrating electricity and then showing clip of Bill Nye video
  - Assignment - Answer the following question: What is electricity?
- What are Insulators and Conductors? by Jessica Pegis available on epic! Books
  - Difficult reading level
  - Possibly use pages 6-13
- Sci Show Electricity video (4:41minutes on YouTube)
  - Great video on circuits but no real mention of insulators and conductors

Science Standards: Next Generation Science Standards(NGSS)

- The full eesmarts lesson Energy Pathways meets these NGSS Performance Expectations:
  - 4-PS3-2 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
  - 4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.