

Lesson Thirteen

Where Electricity Comes From and Formative Assessment

Grade: Fourth Grade

Time: 30-45 Minutes (w/small group accommodations, prediction, and writing support. The teacher will assist any students having difficulties with the circuit or its components)

Materials: The class will be situated within a computer lab with the desktops logged on and on the Pacific Gas and Electric Company website. The teacher computer will be hooked up to the ELMO to project the website.

http://www.pge.com/microsite/safety_esw_nsw/esw/travels/where.html

Objective: The students will use information from the website to identify where electricity comes from. This will clarify the misconception that it does not just come from the outlet on the wall.

Standards: NYS/National Standards

New York State Standards: Standard One: Analysis, inquiry, and design.

- Scientific Inquiry: Key Idea One, The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing creative process. **S1.1** Ask “why” questions in attempts to seek greater understanding concerning objects and events they have observed and heard about. **S1.1a** Observe and discuss objects and events and record observations. **S1.3** Develop relationships among observations to construct descriptions of objects and events and to form their own tentative explanations of what they have observed. **S1.3a** Clearly expresses a tentative explanation or description, which can be tested.

Technology Education: Standard Five: Computer Technology

Key idea: Computers, as tools for design, modeling, information processing, communication, and system control, have greatly increased human productivity and knowledge.

- Use the computer as a tool for generating and drawing ideas

National Standards:

NS.K-4.2 Physical Science

- As a result of the activities in grades K-4, all students should develop an understanding of the following: properties of objects and materials, position and motion of objects, and light, heat, electricity, and magnetism. Utilized to build an electrical circuit as well as being able to understand electricity and its path traveled.

NS.K-4.1 Science Inquiry

- As a result of the activities in grades K-4, all students should develop abilities necessary to do scientific inquiry, and understanding about scientific inquiry.

Lesson Thirteen (cont.)

NT.K-12.5 Technology Research Tools

- Students use technology to locate, evaluate, and collect information from a variety of sources.
- Students use technology tools to process data and report results.
- Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.

Procedure:

- 1.) The teacher will begin class with reflecting on students responses to, where does electricity come from? The majority of students think that it comes from the outlet on the wall. The teacher explains that this is not true and that today they will be finding out where exactly electricity comes from.
- 2.) The teacher explains that they will be using the website from the previous lesson. The teacher models navigating to the “Travels of Electricity” and “Where Electricity Comes From” tab. The teacher explains to students that they will be given a certain amount of time to read over the material on this link and to analyze it carefully. The teacher explains that students will have to sequence the path of electricity using a provided graphic organizer.
- 3.) The teacher gives students approximately fifteen minutes to read over the material, assisting any students and pulling into small group to assist with the reading and comprehension of new vocabulary.
- 4.) The teacher then passes out the graphic organizer and directs students to use the website if they need to assist in completing the sequence. The teacher review that sequence is something covered in reading and is placing things in order from beginning to end.
- 5.) The teacher informs students that there is one short answer question that needs to be answered as well.

Conclusion:

The teacher closes class allowing students to answer and discuss their current learning orally. The teacher asks the question, who thought that electricity came from the outlet on the wall and now realize that they were incorrect? The teacher will ask students where does electricity come from, the teacher will continue the discussion in sequence of its origin.

Formative Assessment, the teacher collects the handout, and reviews that students have the correct pieces of information in the correct order. The teacher looks to be sure that students have answered the short answer question in the proper format and have the correct answer. The teacher will pullout and regroup any students to reteach the topics.