

Lesson Six

Understanding the Positive and Negative Charge

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: Two red inflated balloons on a string, two blue inflated balloons on a string, Scott Foresman Text pages B64-B67, science journals, 25 D batteries, and pencils.

Objective: The students will understand the concept of electric current, and the positive and negative charge with in an electric circuit. They will be able to answer how an object gets an electric charge, what happens to an electric current when a circuit is closed, and what will cause a bulb to light in a closed circuit.

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.

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 Six (cont.)

Procedure:

- 1.) The teacher will explain to students that electricity is able to move through a circuit due to positive and negative charges. The teacher will prompt students to look at the “D” battery placed at their desk. The teacher asks students to notice the positive and negative symbol on either end.
- 2.) The teacher will then have three students volunteer placing a red balloon in the first person's left hand, a blue balloon in each of the middle volunteer's hands, and a red balloon in the far end volunteer's right hand. The teacher will instruct each student to rub the balloons on their shirt lightly. The teacher will then have students line up facing the class.
- 3.) The experiment should unfold that the positive and negative charged balloon will attract however, the two negative charged balloons will counteract and push apart.
- 4.) The teacher also have a student rub the balloon lightly on their head, slowly moving it away from their head allowing the hair to stand up and stick towards the balloon. The teacher explains that this is due to the electrical charges and is an example of static electricity.
- 5.) The teacher and co-teacher then remove their shoes and rub them on the rug. The teacher informs students that this will be an example of what happens when there is a greater amount of negative charges. The teacher with the greater amount of negative charges will shock the other person.
- 6.) The teacher will then ask students if they have any questions and conduct a read aloud of pages B64-B67. The teacher will pause to reflect on diagrams, captions, and glossary terms.

Conclusion:

- The teacher will have students reflect on the reading and add any new information (example: positive and negative charges) regarding electricity to the classroom K-W-L.
- The teacher will then explain to students that today they learned the importance of positive and negative charges in electric current. They will be directed to respond to 3 short answer questions in their science journal. These questions will be posted and are available in the text on page B67. The teacher instructs students to copy the question, restate it in a complete sentence, and locate the information within the text, paraphrase, and write the final answer. This is independent practice of the skill and strategy of locating information from the previous lesson four.
- The teacher will have a small group of students that will require support locating and answering the questions. The teacher will answer one question at a time in a small group setting providing support with text, sentence structure, and locating the information to support student response.