

Parallel and Series Circuits: How Do They Work?

Grade Level: Fifth grade

Title of Lesson: Parallel and Series Circuits: How Do They Work?

Unit Title: Electricity and Magnetism

Performance Standard(s) Covered:

- S5P3: Students will investigate the electricity, magnetism and their relationship.
 - A. Investigate static electricity.
 - B. Determine the necessary components for completing an electric circuit.
 - C. Investigate common materials to determine if they are insulators or conductors of electricity.
 - D. Compare a bar magnet to an electromagnet.

Essential Question: What are parallel and series circuits, and how do they differ?

Objective: The students will learn what parallel and series circuits are. They will also discover the similarities and differences between the two by constructing their own.

Key Words and Terms:

Series Circuit, Parallel Circuit, Insulator, Conductor, Current

Learning Activity

Abstract (limit 100 characters): Students will understand the main differences between a parallel and series circuit. They will build their own models and understand all components of the circuit.

Materials Needed: Separate students into groups of four. Each group will receive a bag with:

- (4) wires
- (2) light bulbs
- light bulb mounts
- D cell batteries and holders

Safety Concerns: Do not allow students to place batteries in mouths. Do not use naked wires.

Procedure:

1. Have students define all terms and review the differences between parallel and series circuits.
2. Show students how to light the bulb using the materials. Explain why and how the bulb is illuminated. Have students hypothesize the minimum number of wires needed to illuminate the bulb.
3. Discuss the role of each component in the series and why it is important to the function of the circuit. Begin removing different parts of the circuit and ask the students how this will affect the function of the circuit.
4. After the students have mastered the series circuit. Demonstrate a parallel circuit, and discuss the major differences between the two.
5. Discuss the role of each component in the parallel circuit and discuss why it is important to the function of the circuit. Have the groups hypothesize what will happen if they remove one bulb. Next have them remove a bulb, and the second one should stay lit.
6. At the end of the lesson, allow kids to explore their room in search of conductors and insulators. Have students touch the wires to different objects to test their hypothesis.

Notes and Tips: Make sure to check the batteries and bulbs before bringing them to class. Some may be dead and/or broken. Go over a short power point preview of the lab. Students should be given definitions, pictures, and instructions in the presentation.

References:

<http://www.focus.uga.edu/fifthgrade/documents/5-PSSeriesandparallelcircuits.pdf>

https://www.georgiastandards.org/_layouts/GeorgiaStandards/Unitbuilder/searchresults.aspx?viewmode=details&StandardIDSelected=147