Investigation Four – Wiring A Circuit

Standard IV Students will understand features of static and current electricity.
Objective 2 Analyze the behavior of current electricity **Intended Learning Outcomes**
1. Use science process and thinking skills.

Standard IV

Objective 2

Background Information

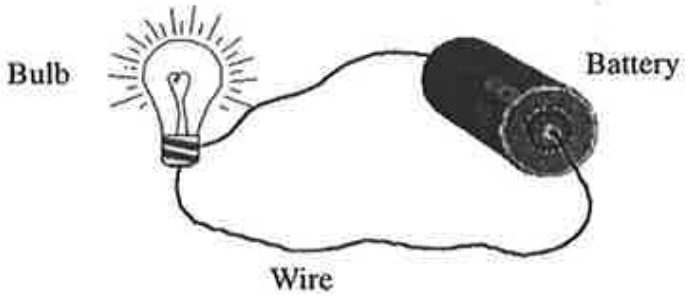
A series circuit is a circuit that consists of more than one power source or more than one load. These pieces of the circuit are wired in series, one part following another.

Pre-Assessment/Invitation to Learn

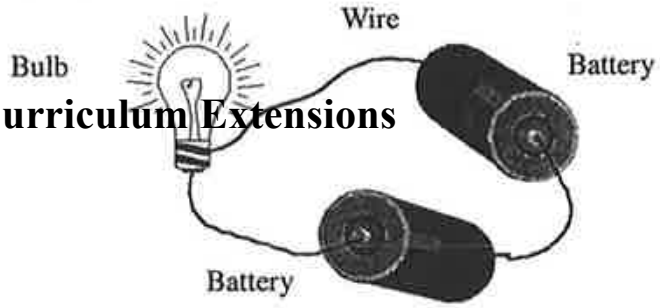
Review previous lessons.

Instructional Procedure

1. Instruct each group to assemble a basic circuit consisting of one battery, two Wires, and a bulb.



2. Before continuing, each student should make a written prediction of What will happen when another battery is included in the circuit.
3. After recording predictions, each group will put an extra battery in The circuit, series style, and then record the result.



Materials

- Assortment of batteries, wires, and bulbs or motors.
- "Circuit Predicting Data Sheet"

Curriculum Extensions

4. Continue making predictions and adding batteries. Use caution since too many batteries will burn out the bulbs.
5. Begin again with only **one** battery. Make predictions about what will happen with more than one bulb or motor.
6. Conclude by making generalizations about the effect of greater loads and the effect of greater power supply.
7. Complete the "Circuit Predictions" data sheet.

Curriculum Extensions

Science –

- Try using fans or motors for the load. Try using a solar panel for the power source. (ILO 1)

Technology –

- Use Kidpix or PowerPoint to make a slideshow of what happens when extra batteries, or bulbs, are added to a circuit. (Standard IV)

Visual Arts –

- Students create a "city" using milk cartons. Add a power source, loads, and electrical pathways. Nine-volt batteries and small lights with alligator clips work well, but many things would also work. Students should be encouraged to decorate the city as creatively as possible. (Standard III, Objective 2)

Assessment Suggestions

- Students create a chart to record predictions and observations. Write a step-by-step description of the path the electricity follows through the circuit.

Reference to Assessment Section:

	Multiple Choice	Constructive Response	Performance Test
Unit Test	7, 8, 9, 10, 11	4, 5	Does it Conduct?

Resources

Software -

- Kidpix, especially Science stamps
- Science Court by Tom Snyder, Electric Current, Grades 4-6
  Package includes CD-ROM, teacher's guide, student reproducibles, and poster.
  Tom Snyder Productions
  80 Coolidge Hill Road
  Watertown, MA 02472
  (800) 342-0236 FAX (800) 304-1254
  http://www.tomsnyder.com

Books -

- Dalton, Cindy Devines. Electricity (How Can I Experiment With …Series) Florida: Rourk Publishing. ISBN: 1-58952-011-4
- Nankivell-Ashton, and Dorothy Jackson. Science Experiments with Electricity. New York: Grolier Publishing. ISBN-0531014580-8
- Farndon, John. Electricity (Science Experiment Series). New York: Benchmark Books. ISBN: 0-7614-1086-4
- Kerrod, Rod. Electricity and Magnetism (Let's Investigate Science Series). New York: Mark Cavendish Publishing. ISBN: 1-85435-626-7

Videos –

- Electricity. AIMS 2001
- What is Electricity? Encyclopedia Britannica, 1989
- Current Electricity. Charles Merrill, Publication, 1987
- Electricity. Lucerne, 1993
- Electricity. Schlessinger, 2000

Circuit Predictions Data Sheet

Circuit Predictions: Start with a basic circuit that includes one bulb and one battery. Make some predictions about what will happen on the chart below. Test your predictions.

Items	Prediction	Result
2 bulbs 1 battery		
3 bulbs 1 battery		
4 bulbs 1 battery		
1 bulb 2 batteries		
1 bulb 3 batteries		