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Physical Science  
Grade 3  
Circuits

**Objective/Purpose:** This lesson was designed to give kids a basic understanding of what a circuit is, and how they can create one themselves. This can be discussed in terms of potential and kinetic energy as well as heat and light energy from the light bulb.  
QCC's: 5 and 6

**Materials/Time Required:**  
For each set of 3 children, you will need:  
- 2 short covered wires  
- 1 D battery  
- 1 light bulb—cut Xmas lights work!  
- Masking tape  
Additionally, have some extra batteries on hand to walk around with.

**Background Information:** I found this idea in the 3rd-grade science book, and thought that the kids would love to make circuits. It went very well, and once I got them started with the basic circuit, many of the kids started thinking of other ideas, such as lighting two bulbs from one battery. **Make sure you test all of the batteries and light bulbs beforehand!!!** Kids get very upset if theirs is the only one not working. Before this, we discussed how energy changes forms and can be stored in different ways.

**Preparation:** I organized each set of materials into plastic bags so they were easy to hand out, but you can also separate them while you are there. In the classroom, draw a diagram on the board which clearly shows how each wire goes to one end of the battery and to the base of the light bulb.

![Diagram of a circuit with a battery and a light bulb.](attachment://circuit_diagram.png)

**Safety Issues:** Instruct the kids to only touch the covered parts of the wire. Also, tell them that all of the materials are used for electricity so they must be careful and follow all the instructions carefully.
Activity Outline/Teacher Procedures: Start by reviewing what potential and kinetic energy are, and how batteries are a form of potential energy. Tell them that they will now get to make a circuit and use the potential energy to light up a light bulb. Draw the diagram and explain that they need to work in groups and tape the battery to the desk so it doesn’t roll away while they hold the wires and light bulb. Divide them into groups of 3 and let them go! Walk around to help, and after most of the groups have gotten the light to turn on, turn off the overhead light so they can see it better. Then take the extra batteries and ask each group individually what will happen if you use 2 batteries instead of one. After they hypothesize, add the 2nd battery and they will be delighted when it gets brighter.

Possible Questions:
1. What kind of energy was making the light bulb light up?
2. Why did adding another battery make the light bulb brighter?
3. What would have happened if you put the wire on the actual light bulb instead of the metal base of the light bulb?
4. Do you think that wire is a conductor or insulator?

Assessment/Evaluation: Ask the students questions to see if they understand the concepts covered in this lab. Also, participation is important in this lab since there are small groups, so you could evaluate based on group participation.