LIGHTS ON AFTERSCHOOL

A PROJECT OF THE AFTERSCHOOL ALLIANCE

Think Make Create LABS

Idaho Out-of-School Network

University of Idaho Extension

Idaho Paper Circuit

Make an electronic circuit on paper shaped liked our state, Idaho!

To do this activity, you will create a closed circuit – a continuous loop that allows electrons to flow from the positive side of the battery, through the copper tape, through the LED to light it up, through more copper tape, and back again to the negative side of the battery.

Instructions:

1. Test your LED and battery by touching the longer (positive) wire of the LED to the positive side of the battery and the shorter (negative) wire to the negative side of the battery. (See picture below.) It won't work the other way around!
2. Cut or tear copper tape into lengths that fit the thick, black lines in the shape of Idaho on the paper circuit board.
3. Peel the backing off the tape and stick it into place over the thick, black lines. The tape must fully overlap—there can be no gaps.
4. Gently bend the wire legs on the LED to line up with the coper tape at the top of "Idaho."
5. Tape the LED wires down by sandwiching the wires between two layers of tape.
6. Fold the paper circuit board up on the "fold" line.
7. Turn your light on by placing a battery (i.e. CR2032 coin cell) in the "coin cell" circle and folding the flap over it.
8. Use a binder clip to keep the battery in place to keep the light on.



Troubleshooting:

- If the LED does not light up, you might have the polarity backwards. Flip the coin cell battery over.
- Make sure there are no gaps or breaks in the tape making the circuit.
- DO leave a gap in the tape where the LED and coin cell go.
- Use a fingernail or ball-point pen to rub the tape down and crease it against the LED wires to increase the strength of the connection.
- The goal is to give the electrons one continuous path to travel through the circuit. Breaks in the circuit create a dead-end for the electrons. Shortcuts give them a way to bypass the LED.

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