

INSTRUCTIONAL GUIDE

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Background

This very cool device consists of a 1.5-inch ball with two small metal electrodes. When the two electrodes are touched simultaneously, the ball flashes and makes a strange noise. The Energy Ball is completely self-contained and requires no additional batteries or energy source. It is often used to demonstrate the fundamentals of circuitry

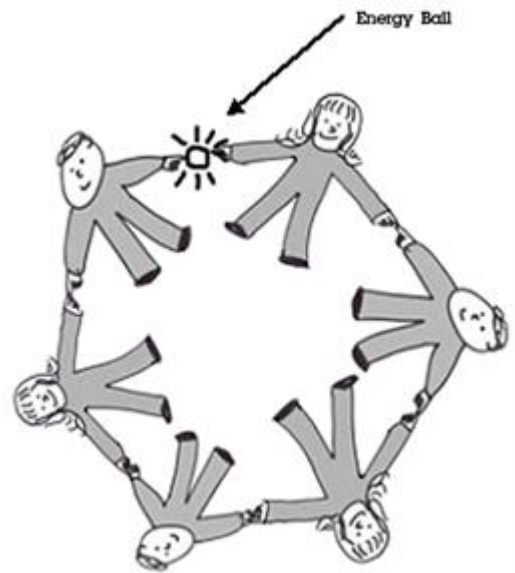
Activities

Conducting Electricity with your Body

1. Touch both of the electrodes at once to activate the ball.
2. Then, hold hands with another person and have each person touch one of the electrodes.
3. Explain why their bodies can conduct electricity.

Conducting Electricity with Materials

1. Lay out a several-foot length of aluminum foil on a table.
2. In one hand, hold the Energy Ball with the thumb touching ONE electrode. Hold the other electrode against the aluminum foil.
3. Place the other hand on the aluminum foil. The Energy ball will activate instantly!
4. Repeat this experiment with several materials such as a hand rail, pencil, cloth, etc.
5. Ask students to explain what makes a material a good conductor or insulator



Explanation

The Energy Ball utilizes a field effect transistor (FET), so even the slightest conduction between the two electrodes activates the light and noise. The FET acts as an electronic switch. When it senses a decrease in resistance between the ball's outer terminals, it switches to the ON state. Current then can flow from the battery through the switch and to the light and noisemaker. When in its OFF state, the FET is very close to its instability point, so it is able to switch ON even when the resistance between the terminals is still very high – even through a long line of people.

Students may ask if the current that activates the light and noise is traveling through their hands. It is not. The part of the circuit that contains the battery, bulb, and noisemaker is parallel to the circuit that the students are making with their hands.

Related Products

Energy Stick (P6-2400) Turn your body into a conductor of electricity! Make a giant human chain of electricity! This safe, easy-to-use toy is perfect for teaching students about the science of electricity, opened and closed circuits, and much more. And it's really simple!

Plasma Globe (P2-7110) Safely create and explore lightning right in your classroom. The Plasma Globe offers you a safe, fascinating way to demonstrate how lightning works as well as explain the concepts of potential differences and electron orbital jumping.