

Human Circuit

Students will cause an Energy Ball to light and make an eerie sound by completing a circuit, first individually, then in a group.



Grade Level

- 4th - 8th

Science Focus

- open circuit
- closed circuit
- electrodes

Time Required

- 10 minutes

Supplies

There are enough materials in the kit to run up to ten cooperative groups.

Per Cooperative Group
1 Energy Ball

Doing the Activity

- Review or discuss open and closed circuits with your students. (An open circuit has a break in the conducting path so electricity does not flow. A closed circuit provides a complete pathway through conductors allowing electricity to flow.)
- Explain that you're giving each group an object called an Energy Ball that they can use to explore open and closed circuits.
- Challenge each individual to create a closed circuit so the Energy Ball lights up and make sounds.
- Then challenge them to light the Energy Ball using all the members of their cooperative group. How do they break the circuit to stop it? Can they think of a different way?
- If groups join together, how many people can they include in their circuit to light up one Energy Ball?
- Can they get more than one Energy Ball to light in a group?

Active Questioning, Explanation, and Discussion

1. Why do you need to touch both metal electrodes? (To complete the circuit. Individuals or whole groups can be the conductors between the two electrodes to activate the Energy Ball. The Energy Ball works like this: a battery inside the unit makes a small voltage on the two metal electrodes. If there is an electrical connection between the two electrodes, a current will flow. The unit senses this current - and turns on the light and sound. It doesn't take very much current to make the unit turn on, and so the objects that are connected between the two electrodes don't have to be very good conductors. People aren't very good conductors, really. But a person will conduct enough electricity to make the Energy

Ball turn on. In fact, you can have a circle of people - a circuit - that will conduct enough electricity to make the Energy Ball turn on. Our favorite activity with the Energy Ball is to have a group of people stand in a circle holding hands, with one person at one end touching one electrode of the Energy Ball and one person at the other end touching the other electrode. This makes a complete circuit - but if two people stop holding hands, there is no more circuit, and so the Energy Ball turns off.)

2. Describe and demonstrate an open and closed circuit using an Energy Ball.

Troubleshooting

1. The Energy Ball works on current, so if people aren't very good conductors, it might not light up when they touch it. This might happen if people have very dry skin. This probably won't be a problem with kids.
2. You might get a short circuit with your Energy Ball causing it to light up even if you don't have what looks like a complete circuit. This can happen if you have a tile or concrete floor (which can be a decent conductor) and people with shoes that are pretty good conductors. This doesn't happen very often, but we have seen it!
3. You can open the Energy Ball up to change its battery. If it doesn't work at all, it might be time for a battery change!