



Open Circuit, Closed Circuit

Post-visit activity connection to Nickelodeon PlayLab

Grade level: K-3, **4th grade** NGSS 4-PS3-2

Concepts: Open and closed circuits

Materials needed:

1. Large open area such as a playground or gym
2. Energy ball (available at Amazeum Curiosity Corner store or other retailers online)

Procedure:

1. Arrange students into a circle. The students will hold hands with the Energy Ball between two students. Allow time to experiment with the Energy Ball so the students understand how the Energy Ball works.
2. Now it is time to play this variation of Duck, Duck, Goose game using Energy Ball.
3. One student (who will be "it") should remain outside the circle.
4. Students should hold hands to create a closed circuit so that the energy ball is operating.
5. The student who is "it" should go around the perimeter of the circle, pointing to each person in turn and saying either "closed" or "opened".
6. Whenever a student is designated as "open", he or she should break the circuit and try to make it around the circle and complete the circuit before the person who is "it" completes the circuit.

What's Happening:

Inside the Energy Ball is an open circuit. By touching both sensors, the circuit is closed and electrons flow through your body. Conductors allow electrons to pass freely.

The students form a closed circuit allowing the electric current to flow through them and complete the circuit lighting the energy ball by holding hands. When the student lets go of the hands they are holding to run around the circle the circuit has been opened and the electrons no longer flow freely.

Book List:

OSCAR and the BIRD –A book about Electricity by Geoff Waring

Electricity is Everywhere by Nadia Higgins

Switch On, Switch Off by Melvin Berger and Carolyn Croll

Extension Activity:

Investigate insulators and conductors by playing the game but add other materials such as foil, paper clips, craft sticks for them to hold between them to see if the Energy Ball will still light.