Topic	Energy
Phenomenon	Current flows around a circuit
Experiment	Role-play to demonstrate electron flow
Material to be provided	none
Additional Material	none
Preparation for experiment	Children should have already had experience with a simple circuit.

Researcher question

How is energy transferred?

Description of experiment

This experiment should not be conducted in small groups, but together with the entire group of children.

Discuss with the children how the energy from a battery passes around the circuit.

The children can model the flow of electrons in an entertaining way by standing in a circle and linking hands. This closes the electrical circuit.

In the circle, the first child represents the electron source, that is, the negative terminal of a battery, and starts off the sequence of squeezing the hand of the neighboring child. He or she uses his or her right hand to squeeze the next child's left hand. This child passes on the squeeze with his or her right hand. Further around the circle, a child represents a load, for example, an incandescent lamp. When this child’s hand is squeezed by the previous child, he or she stamps his or her feet. In this way, the child performs work in the same way that the incandescent lamp starts to light up in a circuit. However, at the same time this child passes on the squeeze of the hand to the next child because the circuit is still closed and the electrons continue to flow. The children continue to pass on the squeeze of the hand until it reaches the positive terminal (left hand) of the child playing the role of the battery.

Explanation

Electrical energy is transferred by the flow of electrons. Like charges repel, and unlike charges attract. For this reason, the negatively charged electrons migrate from the negative to the positive terminal of the energy source. However, this only functions if the circuit is closed.
In this circuit game, the child playing the battery sends out electrons from the negative terminal. These arrive back via the squeezing the hands at the positive terminal of the battery.

A battery is used up when all electrons have migrated from the negative to the positive terminal of the energy source. This is when it needs to be discarded.