

<b>Topic</b>	Energy
<b>Phenomenon</b>	Current is consumed
<b>Experiment</b>	A game teaching current consumption
<b>Material to be provided</b>	4 experiment containers 10 measuring cups
<b>Additional Material</b>	water (alternatively, sand or another material that can be poured) other large containers as necessary: for example, tubs, possibly additional measuring cups (depending on the number of children)
<b>Preparation for experiment</b>	This experiment should ideally be performed outdoors. The children should have already had experience with series and parallel circuits.

### Researcher question

What are the different ways that the energy from a battery is used?

### Description of experiment

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

Divide the children into two equal teams. Each team is given two experiment containers. One of them is filled with water (or sand or similar material) – the same amount for each team. Give each child a measuring cup. The object now is to transfer the contents of one experiment container as quickly as possible into the other experiment container.

There are two possible ways of doing this:

1. One of the children scoops water out of the experiment container with its measuring cup and pours it into the measuring cup of the next child, who then pours it into the next child's measuring cup, and so on. The last child pours the water into the second experiment container. This is continued until the first experiment container is empty.
2. All children stand around the container filled with water. They all scoop water out of the container simultaneously and pour it into the second container until the first container is empty.

Let the children experience these two methods!

Questions about “What is the fastest method of emptying the filled experiment container?”, or “In which way is the water or sand passed on?” will motivate the children to try to discover the connection between this game and a series or parallel circuit on their own.

## Explanation

If all the children scoop water out of the experiment container at the same time, it will be emptied more quickly. This is similar to the case of a parallel circuit, in which the two incandescent lamps are connected to a battery each in a separate circuit. In this case, the battery is exhausted more quickly compared with the series circuit. If one of the children drops out, the others can still continue scooping water – just as when one incandescent lamp is unscrewed, the others will remain lit.

If there is only one child scooping the water out of the experiment container, the same water passes through all the children's hands. That corresponds to a series circuit in which two incandescent lamps are inserted one after the other in the circuit. These two incandescent lamps share the current. If a child drops out, no more water can be passed on – just as when one incandescent lamp is unscrewed, none of the others can light up.

