

Chemical Energy

Summary

Students will engage in an experiment that shows how a battery is made and demonstrates the transfer of chemical energy to electrical energy.

Time Frame

1 class periods of 70 minutes each

Group Size

Small Groups

Materials

- 2 strips of copper, zinc, iron, magnesium steel wool
- salt water solution (20% solution or 20 g salt/100 ml water)
- wet cell chamber (a beaker may work)
- graduated cylinder
- jumper leads
- voltmeter
- paper towel
- [student sheet](#)
(attached)

Background for Teachers

Students may be familiar with the idea of different metals found in different batteries. Nickel and Cadmium (NiCad) batteries are rechargeable. They may have heard of "copper top" batteries and they are certainly familiar with the energizer bunny. Ask why one battery would be different from another. The answers should be different combinations of metals and liquids inside the battery. If you have not introduced the idea of energy transfer, be sure to mention that energy can be changed from one form to another. In the case of a battery, from chemical energy to electrical. You may wish to go one step further and talk about what types of conversions electricity from a battery will take next, such as light, heat or movement.

Time Needed: 50 minutes for experiment, 20 minutes for follow-up discussion and for students to do questions.

Instructional Procedures

Go over introduction with students and show them where materials are located.

Read procedures with students. When you get #4 where they design their own experiment, you may need to guide them. The variables in this experiment that they could change include: adding less salt water, adding pure water, adding more metal strips, putting metal strips closer or farther apart, adding an entirely different liquid (weak HCl, vinegar, weak base) See if students can come up with their own ideas before helping them. Insist that groups do not all do the same thing.

Allow students time to collect their data.

Have each group report on the results of their experiments. Summarize which metal strips produced that most and least electricity.

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)