

Energy Transfers

Summary

Students will model and measure energy transfers from light to heat.

Time Frame

1 class periods of 60 minutes each

Group Size

Pairs

Materials

- solar panels
- electric motors, and small light bulbs
- batteries
- voltmeters(5-10 volt)
- the sun or a bright light source
- wires (or any combination of these, not all are necessary)
- [student sheet](#)
(attached)

Background for Teachers

Students will easily figure out how to get two energy transfers just by using the solar panel to run a light bulb or motor. It will be harder for them to figure out that heat given off by light bulbs and motors. To get four or five energy transfers will require a lot of thought by students. One possibility: batteries to light bulb to solar panel to motor or voltmeter.

Student Prior Knowledge

Students should be aware that energy comes as light, heat, electricity, kinetic and chemical and that it can change from one form to another. They should receive instruction of the use of the voltmeter and solar panels if necessary. This is a good time to review circuits as well.

Instructional Procedures

Explain the purpose of the lab and describe what materials are available. Make sure students know how to make a circuit and use a voltmeter.

Allow students time to work. If you are using the sun as your source of light, you will need to take the class outside.

If students are able to get more than three transfers to work, have them demonstrate for the class.

Allow students time to finish the student sheet in class.

Assessment Plan

Scoring Guide

:

1. Students plan three energy transfers.....6 pts
2. Students set up and test three energy transfers.....12 pts

3. Students correctly answer analysis questions.....10 pts

Answers:

heat

light

heat

Earth's temperature will rise

4. Conclusion is thoughtfully written..... 5 pts

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)