



LESSON PLAN

ENERGY TRANSFER GRADES 3-5

SUMMARY

Students explore the transfer of energy from place to place and form to form. They observe examples of energy transfer between light, heat, electrical, motion, and sound. Students have the opportunity to apply their understanding of energy transfer by building a solar oven.

DURATION

One 50-minute class period

PRE-ASSESSMENT QUESTIONS

Please see Discussion Questions. These can be discussed as a group or answered individually in student science notebooks.

MATERIALS

- Hand-cranked flashlight (or video of a hand-cranked flashlight)
- Plastic cup or another container
- Paper
- Scissors
- Pen
- Computer/printer (optional)
- Science notebooks
- Pencils



ENGAGE

Show students a hand-cranked flashlight. Let them take turns making it shine.



EXPLORE

Print or write the words “motion energy,” “sound energy,” “light energy,” and “heat energy” on slips of paper. You will need to make enough for one per student. Place the slips in a cup or other container. Have each student draw one slip.

Students will get different types of energy. Facilitate a discussion about examples of motion energy, sound energy, light energy, and heat energy. Once students are able to give examples of the form of energy they have drawn from the cup, instruct them to find, or assign them, a partner in one of the other groups. Together, each pair must try to think of an example where the type of energy one represents is transformed to the other. They can share their idea with the class or write it in their science notebook. For example, if a pair consists of heat energy and light energy, the pair may think about reading and staying warm by firelight. Or if a pair has motion and light energy, they may discuss a solar-powered car.



EXPLAIN



WATCH THE GENERATION GENIUS ENERGY TRANSFER VIDEO.

Then facilitate a discussion using the Discussion Questions.



ELABORATE

Students can revisit their ideas from the Explore portion of the lesson. Now they have the background to consider more complex energy transformations. They can combine into larger groups and brainstorm ways to transform energy from one form to another. Students can also complete the DIY Activity and create a s'mores maker for their classroom. Adding the additional challenge described in "further exploration" provides a rich engineering component to the lesson.



EVALUATE

In their science notebooks each student should draw Dr. Jeff's "singing fish" example (can be a simplified model). They should then label their drawing to explain how energy is transferred from the batteries to the fish to make it sing and move. *(Chemical energy stored in the batteries flows through the wires to the lamp, where it is transformed into light energy. Then the light energy is converted by the solar cell into electrical energy to make the fish move (motion energy), talk, and sing (sound)).*

Singing Fish

Solar Cell

Lamp

Batteries

