

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

## You've Got the Power!

### Learner Outcomes:

- Identify, describe and interpret examples of mechanical, chemical, thermal, electrical and light energy
- Investigate and describe evidence of energy transfer and transformation (e.g., mechanical energy transformed into electrical energy, electrical energy transferred through power grids, chemical energy converted to electrical energy and then to light energy in a flashlight, thermal energy converted to electrical energy in a thermocouple.)

### Key Terms:

Electrical energy

Chemical energy

Sound energy

Static electricity

Mechanical energy

Energy transformation

Current Electricity

Potential energy

**Background Information:** Energy helps us do things. It gives us light. It warms our bodies and homes. It bakes cakes and keeps milk cold. It runs our TVs, computers, hair dryers and our cars. It makes us grow and move and think. Energy is the power to change things. It is the ability to do work.

Energy comes in many forms including thermal energy, light energy, chemical energy, mechanical energy, sound energy and electrical energy. Energy never disappears, but it does get changed from one form to another. When we can purposefully change energy from one form to another, we can make it work for us.

**Research Question:** How is energy transferred and transformed to do work?

### Materials:

Thermocouple  
apparatus

Hand crank flashlight /  
radio

Solar calculator  
Candies / fruit

Batteries

I-pod or radio

Potato clock

Flashlight (battery)

Room fan or blow dryer

**Procedure:**

1. Observe each device provided by your teacher and record the original source of energy going into the device.
2. Observe and record the form of output energy and any transformations in between.
3. Record any evidence of energy transformation or transfer.
4. Record the type of work the device does.

**Observations:**

| <b>Device</b> | <b>Original Energy Source</b> | <b>Final Energy Form</b> | <b>Evidence of Energy Transfer</b> | <b>Work done</b> | <b>Additional Energy Conversions</b> |
|---------------|-------------------------------|--------------------------|------------------------------------|------------------|--------------------------------------|
|               |                               |                          |                                    |                  |                                      |
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## **Analysis:**

1. Which devices use electrical energy and which devices produce electrical energy?
2. Why might some devices be designed to produce electrical energy instead of use it? Give an example.
3. What is the original source of necessary for all of the devices / materials you observed? Explain.
4. How is chemical energy useful?
5. How is static electricity useful?

## **Conclusion:**