# Energy Sleuths

**In this lesson students will learn that energy is what gives people, animals ,objects and machines the ability to move and survive. They will also uncover different forms of energy that humans use to perform human functions.**

**Grade Level:** 1st grade

**Phenomena:**
**How do we rely on and use various forms of energy every day?**

**Objectives:**
- Students will define energy.
- Students will list and demonstrate five sources of energy.
- Students will categorize different objects and/or living things by their energy source.

**Materials:**
- Energy attachments (pgs. 4-9)
- Pictures from magazines, the internet or calendars
- Envelopes
- Energy chart posters (example on pg4)
- Paper
- Pencils
- Crayons/Colored pencils

**Time Considerations:**
Preparation: 10 minutes
Activity 1: 10 minutes
Activity 2: 10 minutes
Activity 3: 10 minutes
Activity 4: 15 minutes
Conclusion: 10 minutes

**Related Lesson Plans:**
Energy Chains
Sun Rays
Transfer Me This
Solar Matters

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**Next Generation Science Standards**

2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.

**Science and Engineering Practices (SEP):**
Planning and carrying out investigations.

**Disciplinary Core Ideas:**
LS2.A: Interdependent Relationships

in Ecosystems

**Crosscutting Concepts:**
Cause and Effect

**Excellence in Environmental Education Guidelines**

**Strand 2.4 .A.** Human/Environment Interactions: students understand that people depend on, change and are affected by the environment.

**This lesson has been adapted from Project Learning Tree Energy Sleuths lesson:**

Project Learning Tree. Environmental education Activity Guide pre K-8. American Forest Foundation. 2008. Pgs 167-173.

## Background

You can't see it, touch it, smell it, or taste it, and yet it powers everything in nature as well as everything people do. What is it? Energy, of course. Energy is the ability to do work or create change.

Energy is important because nothing can happen without it. We use energy when we read, run or have fun. Energy lets us grow our food, process and package it, deliver it to our stores, cook it, eat it and digest it. We need energy to power our TVs and cell phones. We also need energy for our houses, clothes, and other needs.

We get energy from many different sources. In this lesson, students will learn about the energy we get from food, wind, electricity, gasoline and the sun.

Food gives humans energy

Plants get energy from the sun. People get energy from food.

and nutrients to maintain a healthy life, grow and develop, move, work, play, think, and learn. Carbohydrates and fats mainly provide energy, although some fats are also needed as building materials and to help the body use certain vitamins.

Wind is created by the Sun's uneven heating of the Earth's

surface. The Sun's energy heats the air, causing it to rise. Colder dense air rushes in to take the place of the less dense warm air and creates wind. Wind was one of the earliest forms of energy that people learned to use. Wind can be used to move sail boats through the water and to power grain mills. Farmers have used wind energy for many years to pump water from wells. Today wind is used to generate electricity. Large numbers of wind turbines are grouped together in "wind farms". They are designed to catch the high-speed winds that blow throughout the year. These wind turbines look like enormous airplane propellers. When the blades spin, they turn a generator that makes electricity. Kites and sailboats are some things that are powered by the wind.

Electricity is the flow of electrical charge. It is a secondary energy

Wind Farm

source which means we get it from the conversion of other sources of energy, like coal, natural gas, and other natural sources. These energy sources are called primary sources. Electricity is a controllable and convenient form of energy used in the applications of heat, light, and power.

Solar energy is created in the sun's hot core. All the energy in fossil fuels, wood, food, wind and most waterpower originally comes from the sun. Solar panels can be used directly to heat buildings and water, and to provide light. Solar energy can be used to produce electricity.

Gasoline is one of the main products refined from crude oil, accounting for about 17 percent of the energy consumed in the United States. The primary use for gasoline is in automobiles and light trucks. Gasoline also fuels boats, recreational vehicles, and various farm and other equipment.

## Preparation

Cut out pictures from magazines and calendars of ways people, animals, plants, cars, kites, etc. use a source of energy.

- Put at least 4 examples of each source in each envelope that is labeled with a group number
- Prepare energy definition poster (pg 10)
- Print off pages 5-9
- Make energy chart posters

## Doing the Activity

***Activity 1: Super Hero Power***

Have the students draw a picture of a superhero, one of their own creation or one they know from TV, books, computer games or movies. Ask them to show how their super hero gets her or his power to do superhuman things.

Tell the students to share their pictures with a classmate and to describe the sources of power that their super hero uses.

***Activity 2:***
***Thinking and Moving***

Introduce the term energy. Explain that energy is what gives people, plants, animals and objects the power to move and change. Put a laminated definition of energy on the chalk board.

Ask the class to make a list of ways that people get energy to do human things (from food, electricity, gasoline, wind and solar power).

Some prompts to get the students thinking:

- Food– what do you do when you get hungry?
- Electricity– when you plug in a toaster what do you use to get it to work?
- Gas– what do we put in the car to make it go?
- Wind– what helps our kites fly?
- Sun– Solar panels, solar ovens

When the students come up

with the answer put the corresponding picture/word on the board. (pages 5-9)

After you are done putting pictures on the board ask students to point to something in the room that uses energy. Call on students to state what object they are pointing to and where it get its energy. For example, a computer gets its energy from electricity and a plant gets its energy from the sun.

The instructor may also point to objects in the room and have students come up with the correct energy source. They can be real objects or pictures, (such as a Magic School Bus book for gasoline).

***Activity 3: Energy in Motion***

Have students stand up and tell them you are going to teach them some hand motions to go with the way we use energy in our daily life.

For food have students rub their stomachs, for electricity have them “plug” in something, for gas have them put their thumb up and a finger stretched out like a gas nozzle, for wind have them wave their arms, and for sun have them shade their eyes. (The instructor may also choose to have the students come up with an appropriate action for each energy source that the class can agree on to use.)

While doing these hand motions, have the students say the energy source that they each represent. Repeat this at least two times.

Now have the students play a couple of rounds of Simon Says by having them do the hand gestures you just taught them.

An alternative to Simon Says is Energy Flash: Instructor stands with back to the students. Then the instructor turns around and shouts out an energy type and students must show the action. This can also be reversed where the instructor can do the action and students must say the energy type.

***Activity 4: Energy Sort***

Divide the class into five groups; each group will then get a chart and an envelope. Tell the students to take the pictures out of the envelopes and have them sort the pictures by where that item gets its energy. When they are done doing that, ask some students what they put under each category?

If the students are waiting for other classmates to get done with this project tell them they can continue coloring their super hero picture.

If two groups are both done early they can also switch envelopes so they have different pictures to work with.

## Conclusion

Review with the class what energy is and examples of uses for each type. Is energy important to our everyday lives? Where does energy come from? Go around to each group and discuss some of things that they put under the categories.

## Assessment

Assess students on their ability to match correct cutouts with the categories.

## Extensions

Take the class for a walk to look for examples of people using each of the energy sources the students learned about.

## Vocabulary

**Electricity**: Energy produced by a power plant and transported by power lines.

**Energy: G**ives living and non living things the power to move and change.

**Food:** Energy that animals need to consume to go about their lives.

**Gasoline**: A petroleum product used to power auto mobiles.

**Solar Energy**: Energy captured from the sun via solar collectors.

**Wind Energy**: Energy captured from the uneven heating and cooling of the earth.

## Sources


- Project Learning Tree. Environmental education Activity Guide pre K-8. American Forest Foundation. 2008. Pgs 167-173.
- Fort Scott, . (Photographer). (2010). Special events 2011. [Web]. Retrieved from http://www.fortscott.com/images/userfiles/Image/vegetables.jpg
- Insider Fortunes, . (Designer). (2010). Wind energy can't weather storm.

Use Butcher Block Paper that measures 2ft by 2ft to make the chart below:

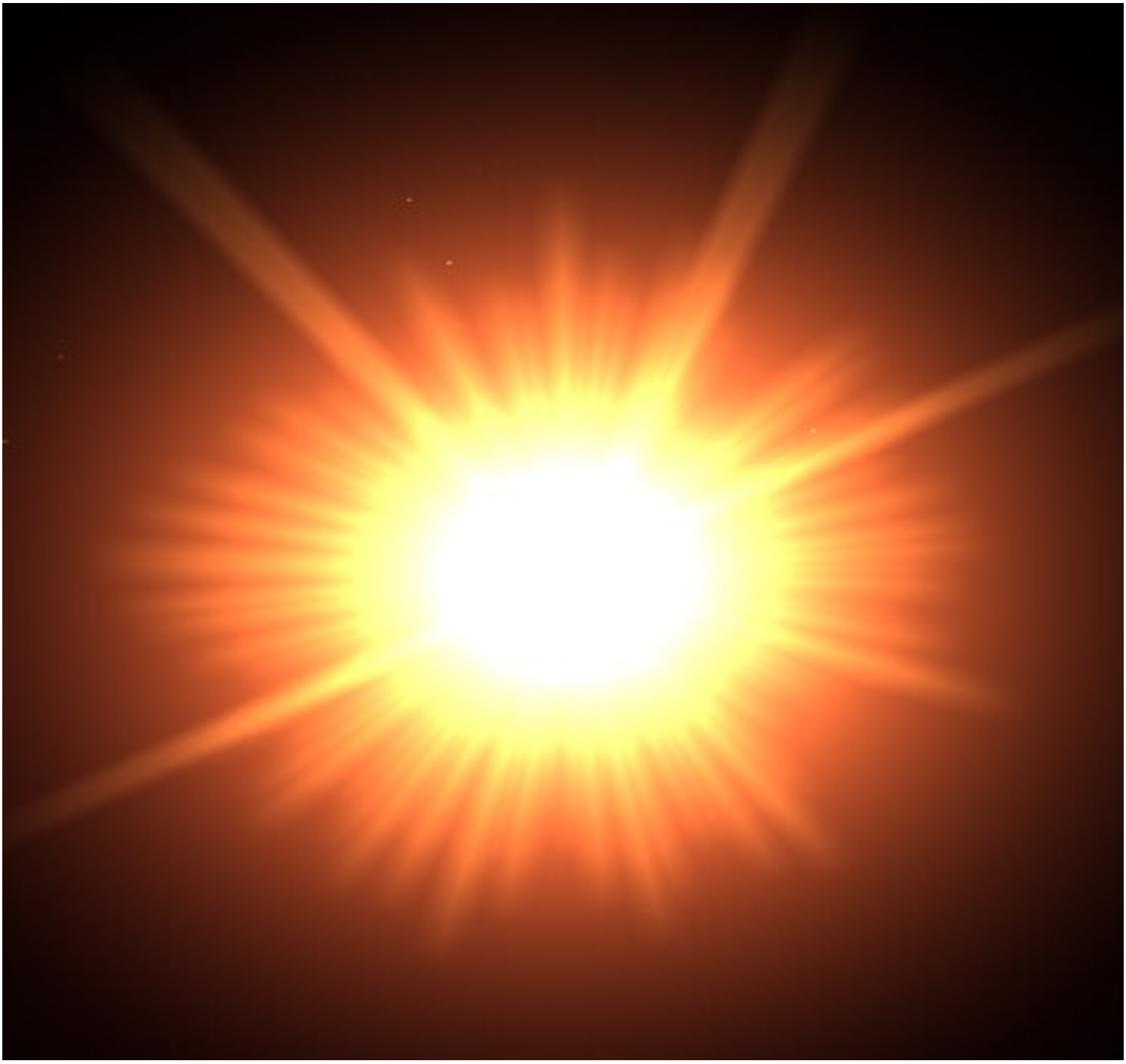
| | |
|---|---|
| Gasoline | Electricity |
| Sun and Wind | Food |

# Wind

# Electricity


# Gasoline

# Food



# Sun

# Energy

Gives living and non living things the power to move and change.