

Energy Detective

Grade: 6 – 8

Time: 1 class period

Lesson #A1:

What is Energy?

Overview:

This is an introductory activity for studying energy. Students will look for energy, collecting "energy evidence," and then come up with their own definition of energy.

Essential Questions:

What is energy?

Content:

- Standards addressed
- Vocabulary
- Assessment
- Teacher Information and Procedure
 - Prior knowledge for students
 - Materials
 - What to do in advance
 - Teaching the lesson
 - Gear –up
 - Explore
 - Generalize
 - Assess
 - Extensions, Adaptations, and more resources
- Student Handouts:
 - Detective Data Sheet
 - Report Sheet
 - Extra Clues

Source: From R.E.A.C.T. Teacher's Activity Guide, National Renewable Energy Laboratory Education Programs Home page: <http://www.nrel.gov>



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Overview:

This is an introductory activity for studying energy. Students will look for energy, collecting "energy evidence," and then come up with their own definition of energy.

Essential Questions:

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Assessment:

Can students

- Define energy in their words?

Vocabulary

- Energy
- Work
- Force
- Heat
- Movement

Alaska Standards Addressed:

Science GLEs

The student demonstrates an understanding of:

- how energy can be transformed, transferred, and conserved by [6]SB2.1 recognizing that energy can exist in many forms

- the processes of science by [6, 7, 8] SA1.1 asking questions, predicting, observing, describing, making generalizations, inferring, and communicating.



Teacher Information and Procedure

Prior knowledge for students: None

Materials needed: Copies of Detective Data Sheet, copies of clues

What to do in advance: Make copies

Teaching the lesson:

Gear- up:

Have students create a “word splash” with energy terms they are already familiar with; make small posters of the word splashes. A “word splash” is basically a collage of terms.

Explore:

- 1) Give each student group a copy of the Detective Data Sheet and a copy of the clues. Point out that their goal is to search for the answer to "What is energy?"
- 2) Based on the clues given in the hand-out, students go in search of evidence that will help them find the answer.
- 3) Once they have written each clue onto their Data Sheet, have each group come up with a definition.
- 4) Have each group share their definition with the rest of the class.

Generalize:

- 5) Discuss with students: Can you feel energy? (Heat waves or energy in wind can move us around on a windy day or cause a sailboat to skip across a lake.) Can you see energy? (Yes, sunlight.) Can you hear energy?
- 6) Have students look up the definition of energy in the dictionary (the capacity for vigorous activity; available power) and compare with the physics definition (the ability to do work). Discuss how these definitions compare with the definition students came up with.
- 7) Have students make up a list of clues that they can find at home that support the definition, "Energy is the ability to do work." (Examples: electricity causes the light bulbs to glow and get hot, sunlight causes plants to follow it, running water causes left over food to be rinsed from the plate when held under it, etc.)

Assess:

As a warm-up for class, a few days later, ask students to write down a definition of energy.

Extensions, adaptations, and more resources:

This activity could be done by individual students rather than small groups.

Handout 1

Name _____

DETECTIVE DATA SHEET

CLUES

1. Energy can make things change.
2. Heat comes from energy.
3. Movement comes from energy.



EVIDENCE

We know that energy was here because.....	Energy Source (sun? wind? electricity? other?)

Name _____

REPORT FROM THE**“ _____ ”**
DETECTIVE AGENCY

After you have collected energy evidence, have each person in your group make up a definition for energy. Write definitions in the spaces below. Next, have your whole group agree on one definition and write it at the bottom of the page.

DETECTIVES' NAME	DEFINITION OF ENERGY

GROUP ANSWER: *WHAT IS ENERGY?*

EXTRA CLUES FOR PUZZLED DETECTIVES

1. Electrical and solar energy give us light.
2. Sun energy grows our food.
3. Lightning is a natural form of electrical energy.
4. Gasoline, made from crude oil, gives us energy to make cars go.
5. Energy heats our homes and school.
6. Energy keeps our refrigerator cold.
7. Sailboats need wind energy.



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