

Understanding Energy

Lesson 1: Energy Sort

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DESCRIPTION: Students will be put in groups of six to eight students. Each group will have images of various items that produce heat (light bulb, hair dryer, refrigerator, computer, game system, television, car, motorcycle, microwave, space heater, etc.). The goal is to sort the images into categories based on criteria that the group determines. Each group will have ten minutes to define the criteria they will use and then sort the images. After ten minutes, each group will explain the reasoning behind the sort they did.

After each group has shared, students will write a one-paragraph response to the group activity.

GRADE LEVEL(S): 4th, 5th

SUBJECT AREA(S): Energy, energy transformations, potential energy, kinetic energy

ACTIVITY LENGTH: 40 minutes

LEARNING GOAL(S): Students will begin to think about various appliances and items that they use and the energy that those items consume. Students will make connections between common objects in their lives and energy transformations taking place.

NEXT GENERATION SCIENCE STANDARDS:

• 4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

UNIT CONTENT:

- Lesson 1: Energy Sort
- Lesson 2: Brainstorm Energy Sources
- Lesson 3: Energy Basics
- Lesson 4: Home Energy Survey
- Lesson 5: Solar Energy Basics
- Lesson 6: Home Energy Use
- Lesson 7: How to Observe and Keep Records
- Lesson 8: Setting Up an Experiment
- Lesson 9: Collecting and Reporting Data, Making Recommendations
- Ongoing Activities: Daily Observations and Record Keeping

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Materials List

- (4 sets of) 15-20 images of heat-producing items
- (1 per student) Solar energy spiral notebook

Student Background

- This is an introductory lesson, so no student background in energy is expected.
- Students should have experience working in heterogeneous groups; otherwise they will need instruction and practice or supervision with how to work in groups to include all participants.

Educator Background

- Teachers should be comfortable with sources and uses of energy.
- Teachers need to understand how energy consumption varies by device.

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Lesson Details

Planning and Prep

- Print four copies of each image.
- Cut images and store each set in 1 large plastic bag, one per group for 4 groups total

Lesson Details

- Divide students into heterogeneous groups. Each group will be given the direction to sort or separate the pictures into groups based on how they agree to group them. It also needs to be emphasized that there is not a "right" or "wrong" answer.
- Groups will be given ten minutes to determine the group criteria that they will use and to sort the pictures.
- Each group will share the groupings they made and the reasoning behind the sorting.
- The teacher will lead a discussion with the whole class about how different groups sorted differently even though they started with the same pictures and the same directions.
- After the class discussion, students will respond to the activity in their science notebook by writing a one to two paragraph response to the group activity and the content.

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