TRB 3:5 - Investigation 5 - The Little Orange Rooster

Summary

Classroom activities help students understand that heat energy can be produced by mechanical and electrical machines.

Group Size

Large Groups

Materials

- Little Orange Rooster story (pdf)
  1 slice of bread per student
- Heat Sources worksheet (pdf)
  food coloring
  4 containers
  2 cups of milk
  toaster
  1 paintbrush per student

Additional Resources

Books:

- *Science Books of Energy*
  by Neil Ardley (Dawn Publications)
- *New Way Things Work*
  by David Macaulay (Houghton Mifflin)

Background for Teachers

Heat energy can be produced by mechanical and electrical machines and can sometimes produce light. Mechanical machines are those which do not use electricity, such as machines that use fuel (cars, lawnmowers), human strength (bikes, skateboards), or flowing water (water turbine). Classroom examples of mechanical machines include using scissors, a stapler, or a pencil sharpener. Electrical machines include those which use electrical power and would have a plug or use batteries. Classroom examples include an overhead projector, electric pencil sharpener, computer, heat lamp, TV, or VCR.

Intended Learning Outcomes

1. Use a Science Process and Thinking Skills
3. Understand Science Concepts and Principles

Instructional Procedures

Pre-Assessment/Invitation to Learn

Ask students for some examples of heat sources - things that produce heat. Write them on the board. If machines are not mentioned, talk about some machines that also give off heat, even if they are used for something else. Has anyone ever felt the back of a computer? Sometimes that is warm. Light bulbs can get so hot that you could burn yourself if you touched one while it was still on. Today, we're going to hear a story about a Little Orange Rooster (pdf). While listening to the story, think about all the machines that he and his friends use, and think about if those machines would get

warm or not.

Instructional Procedures

Read the story of the Little Orange Rooster.

Discuss with students the different machines that they used. Some of those machines were mechanical; they had motors that used gasoline. Some of the machines were electrical; they were plugged in or used batteries.

Help students classify which were mechanical and which were electrical.

Hand out the Heat Sources worksheet (pdf), and instruct students to draw 4 examples of each type of machine.

Sometimes machines that produce heat also produce light. Have students complete the worksheet by drawing some mechanical and electrical machines that produce light as well as heat.

Extensions

Science-

Students can be challenged to make a list of as many mechanical and electrical heat sources as they can find, with extra credit being given to all students who make of at least 25 machines. *(ILOs 2, 3)*

Students may choose to classify machines as those which give off a lot of heat, and those which give off a little heat. They may also classify machines that give off heat, but no light, and those which give off heat and light. *(ILO 1)*

Language Arts-

Listen and demonstrate understanding by responding to the step directions. *(Standard I, Objective 1)*

Homework & Family Connections

Encourage students to show their family how to make Machine toast (see Assessment Suggestion #2). Each family member must draw a different type of machine, and label it as mechanical or electrical.

Assessment Plan

Have students complete the writing activity "Energy from the Sun" (pdf) in which they fill in the words to the story.

Have students draw a picture of their favorite electrical or mechanical machine in the following way:

a. Teacher will pour 1/2 cup of milk into four small bowls.

b. Put two drops of food coloring in each bowl (one color per bowl).

c. Have students use a clean paintbrush and paint a picture of their favorite machine on one side of the bread. The picture should only be outlined, so the bread won't get soggy. Then they will paint an "M" for "mechanical", or an "E" for "electrical", to show what type of machine it is.

d. Toast the bread in a toaster.

e. Spread with butter and jam if desired.

Authors

Utah LessonPlans