Sources of Energy

First Grade
Activity: 5
Time 1: Class Period

General Description

The class will investigate how the sun is the main source of the earth's energy by observing different plants and determining which have the most stored energy.
Students will accomplish this by planting seeds and recording what happens to those plants that receive sunlight versus those that do not.

Objectives

Students will identify the sun as the primary source of the earth's energy.
Students will compare those plants that receive sunlight versus those that do not and explain what happens to them.
Students will record data and make connections between those plants that receive light and those that do not.

Arizona State Standards

SC01 S1C1 PO1 Compare common objects using multiple senses
SC01 S1C1 PO3 Predict results of an investigation based on life, physical, Earth and space sciences (e.g., animal life cycles, physical properties, Earth materials)
SC01 S1C2 PO1 Demonstrate safe behavior and appropriate procedures (e.g., use of instruments, materials, organisms) in all science inquiry
SC01 S1C2 PO2 Participate in guided investigations in life, physical, Earth and space sciences
SC01 S1C2 PO4 Record data from guided investigations in an organized and appropriate format (e.g., lab book, log, notebook, chart paper)
SC01 S1C4 PO1 Communicate the results of an investigation using pictures, graphs, models, and/or words
SC01 S4C1 PO1 Identify the following as characteristics of living things:
- growth and development
- reproduction
- response to stimulus

SC01 S6C2 PO1 Identify evidence that the Sun is the natural source of heat and light on the Earth (e.g., warm surfaces, shadows, shade)

W01 S1C1 PO1 Generate ideas through prewriting activities (e.g., brainstorming, webbing, drawing, writer's notebook, group discussion)
W01 S1C1 PO2 Draw a picture or storyboard about ideas generated

M01 S2C1 PO1 Formulate questions to collect data in contextual situations
M01 S2C1 PO2 Make a simple pictograph or tally chart with appropriate labels from organized data
M01 S2C1 PO3 Interpret pictographs using terms such as most, least, equal, more than, less than, and greatest

M01 S2C1 PO4 Answer questions about pictographs using terms such as most, least, equal, more than, less than, and greatest
M01 S2C1 PO5 Formulate questions based on graphs, charts, and tables
M01 S2C1 PO6 Solve problems using graphs, charts, and tables

LS F1 Use effective vocabulary and logical organization to relate or summarize ideas, events and other information
LS F2 Give and follow multiple-step directions
LS F3 Prepare and deliver information by generating topics; identifying the audience; and organizing ideas, facts or opinions for a variety of speaking purposes such as giving directions, relating personal experiences, telling a story or presenting a report

Teacher Background

After the plants have grown, discuss the differences in the plants: Which plants have more stored energy? Where will the stored energy be used? Students should keep a picture log or a graph to record the plants' growth.

Materials

Potting soil
Small paper cup
Seeds (grass, radish)
Craft sticks
Markers
Ruler

Procedure/Exploration

1. Brain storm and list what plants need to grow.
2. Provide students with a cup. Allow the students to fill the cups with soil and then plant their seeds.
3. Give the students the option to place their containers in the sunlight or in the dark. You will want to guide students without demanding that about 50% of the class's plants be placed in the dark and the others in the sunlight. You may want to have extra plants to put in the dark.
4. Record the first day's measurement at 0. Take a measurement every day for two weeks.
5. Watch the plants grow; students will write down or draw their observations of the plants.
6. Periodically ask the students if there is a difference in plant growth of those in the dark and in the light? Which seems to be growing faster? Are the leaves fuller on one plant over the other?
7. Discuss with the students the chain of energy: Cows eat the grass. People eat hamburgers. People need to eat to have energy; can they get energy from the sun by eating meat?
8. Visually show the student that they receive energy from the sun via the food they eat.
9. Extension: Have students brainstorm how else they use the energy from the sun.