



ENERGY TO GROW ON

RYAN JONES

Time Frame:	Standards:
Three 30-minute periods 3 rd Grade	3.S.1.2.1 Make observations, collect data, and analyze it 3.S.1.2.2 Replicate and use models 3.S.1.3.2 Measure changes that occur
Objectives:	
The student will observe a natural conversion system	
Background Information:	
<p>The food chain for humans begins with plants. Under ordinary growing conditions, plants require soil, water, air, and sunlight. All of these conditions must be present for optimal growth of the plant. Of these elements, the energy source is sunlight, or solar energy, which is used by plant leaves to combine chemicals from air and water.</p> <p>Carbon dioxide from air and hydrogen from water are combined to form carbohydrates. These carbohydrates, stored in the plant's leaves, stems, and roots, are the major energy source for the animals (including humans) who eat them.</p> <p>Plants get their food from the soil which supplies chemicals for making proteins, vitamins, and minerals. When we, in turn, eat plants, our bodies use these proteins, vitamins, and minerals as building materials for bones, muscles, and all the rest of our physical parts.</p>	
Materials:	
<ul style="list-style-type: none">• Plant container for each student (clear plastic cup, punch two holes in bottom for drainage)• Potting soil-enough for each student's container• Seeds-bean, pea, popcorn, or other large seed	

Procedure:

1. Have students fill several small containers with potting soil and plant their seed of choice. (Plant a couple of seeds near the cup edge to allow observation of the germination process)
2. After seeds have germinated, place several plants in the dark, several plants in an area with very little natural sunlight, and the rest in the sunlight.
 - A. Observe the plants every couple of days for several weeks and discuss the differences between the plants
 - B. Questions to discuss:
 - What do you observe about the plants in full light?
 - What do you observe about the plants in partial light?
 - What do you observe about the plants in the dark?
 - Which plants look the healthiest and why?
 - What does the sun's energy or light do for the plants?
 - How did the plants use the sun's energy?
 - Did some plants bend toward the sunlight when turned in various positions?
 - Does this show the plant is affected by the sun?
3. Explain that plant growth is the result of the conversion of energy. Plants will not grow or produce food (for the plant or for other people or other animals) without the sun's energy.

Extra:

Write *plants* vertically on the board and have the students brainstorm to identify words or phrases that describe what plants do or need.

P otting soil
L ight
A ir
N utrients
T ime
S unlight

Assessment:

Have the students chart and care for their own plants. List things the plant will need to grow well: air, sun, food, (fertilizer), and water.



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Additional Content:

N/A

References:

National Energy Foundation-Resources for Educators
Energy Fun-Integrated Learning Activities-Primary
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Energy for Educators

Bringing Energy into the Classroom