THE SEARCH FOR ENERGY

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Time Frame:	Standards:
45 minutes 2nd Grade	**2.S.1.7.1** Practice cooperation and interaction skills **2.S.1.6.2** Make observations **2.S.1.6.4** Communicate observations

Objectives:

The students will learn the difference between renewable and nonrenewable resources.

Background Information:

In the early part of last century, solar energy was a leader in the developing energy industry, but was quickly displaced by less expensive coal, petroleum and natural gas. Fossil fuels were an important energy source and they were available and plentiful. Today, fossil fuels are becoming more difficult to discover and more expensive to recover. However, solar energy is as plentiful as it was 100 or 1,000 years ago and research and development have increased the economics and competitiveness of this resource. It is a valuable, renewable, non-polluting resource with great potential to help us meet our future energy needs.

Materials:

- Birdseed, about ¼ cup (solar energy)
- Plastic beads – *250 brown (coal 84%), 50 red (uranium 16%), 7 white (natural gas 2%), 4 blue (oil 1%)
  *These portions are an approximate representation of the nonrenewable energy reserves in the U.S. and Canada

Procedure:

1. Divide the class into five groups. Assign each group or "company" or "Industry" one of the five energy resources to recover.

2. Scatter all of the beads, plus a spoonful of birdseed, over a certain area (a large tarp or canvas works well). Wrap about half of the beads in plastic bags, small boxes, or paper. Instruct the groups that they may unwrap the beads to determine if they belong to their industry, but if they do not then they must rewrap them and place them back on the tarp. (This simulates the resources hidden beneath the ground.) Then give the five energy industries one minute to gather as much of their particular resource as possible. Everyone must stay around the perimeter of the tarp and reach for the resources; they cannot crawl or walk on the tarp.

3. After one minute have the groups count the beads or seeds they recovered and record the results. The fossil fuels group should be way ahead and the solar group may complain that it's much harder to pickup the smaller seeds.

4. Scatter another spoonful of seeds (since solar energy is a renewable resource, there is the same amount each time) and repeat the one minute search.

5. Again, count and record the results of each group. The fossil fuel "deposits" are becoming more difficult to locate. The solar group is slowly but surely catching up.

6. Repeat the one minute search after adding one more spoonful of solar seeds. The fossil fuel companies may have tapped out all available resources by this time while the solar industry continues to gain.

7. Total the results for each group and discuss. Which resources were most plentiful? Which were the least? Which were easier to locate and recover? How does this represent our actual reserves and their availability? Solar energy is more difficult to harness or pick up, but has an advantage in the long run. What is it? Did the class come up with any techniques to improve efficiency? Relate this to real life.

8. After scattering the rest of the seeds, give the class one last three minute period to recover all remaining resources. A few last fossil fuel deposits may be discovered through improved technologies and more diligent searching. Our solar energy is abundant, and it's possible that small amounts of our fossil fuels will remain unused. Why?

Extra: Add rice (wind) and pearl tapioca (water) to the activity. Lead a discussion to be sure the students understand why you continued adding more birdseed, rice, and tapioca after each minute session, but did not add more beads. As a class come up with a general outline to more effectively manage the resources that are available.

Assessment:

List the pros and cons of renewable and nonrenewable resources.

Additional Content:

N/A

References:

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