**Lesson Topic: Grade Level Time:**

Solar Energy K-2 30 minutes

**Objective:**

Students will observe the effects of sunlight on solar beads in order to conclude that the sun creates energy that humans can use.

**Materials:**

-solar beads

-string (one piece per student)

-recording sheet (one per student)

**Engagement:**

[**http://www.kidsastronomy.com/our\_sun.htm**](http://www.kidsastronomy.com/our_sun.htm)

This site gives a detailed photograph of the sun’s surface. This can be used to generate discussion on what students know about the sun.

-Brainstorm a list of reasons why the sun is important. Student responses may include: to warm up the Earth, to help plants grow, etc.

**Exploration:**

-Tell the students that they will be making bracelets from special beads. It’s their job to change the colors of the beads, and every job requires energy to get it done. We need to find a way to make these beads change color.

-Have them brainstorm a list of things in the classroom that need energy to do their jobs. This should lead to the topic of electricity. Find things in the room that use electricity to do their job. Can we use electricity to change the color of the beads? Will they change under the lights?

- Tell them that these beads use light energy to change colors. Have students make predictions about what will happen when the beads are held up to classroom lights.

-Give the students time to create their bracelets as you record their predictions.

-When the beads show no change, ask students, “Where else can we find light energy to change the colors of the beads if the classroom lights didn’t work?” Guide students towards the idea that we can try using the sun’s energy.

-Take students outside to observe the effects of the sun’s energy on the beads.

**Explanation:**

-Upon returning to the classroom, discuss the students’ observations.

-Have the students draw a “before” and “after” picture of their beads.

-Ask students, “Why did your beads change color?” *(The sun’s energy changed their color.)*

*-*Lead a class discussion on the other ways that we know about the sun’s energy. –Discuss what the sun helps to grow. This should lead to plants and trees using the sun’s energy to help them to grow. Ask students where a great place to put a potted plant is. Why is it beneficial to have it in the window? This should develop students’ understanding that the sun gives energy.

-Ask students how we feel that the sun is out? Discuss how we feel on warm, summer day or how the inside of a car feels in the middle of the day in the summer! What warms this? The heat from the sun and that is its energy!

-Explain to students that sometimes people want to use the sun to help us make electricity! These are called solar panels and they use the sun’s heat! Has anyone ever seen a solar panel on top of a house or building before?

**Extension:**

-Brainstorm a list of other ways to use the sun’s energy to do a job. If the students are having trouble coming up with ideas, guide them by asking questions such as, “How could you use the sun’s energy to dry your beach towel? How do our classroom calculators get energy?”

-Discuss how we know the sun is doing its job (plants growing, green grass, etc.)

**Evaluation:**

-Have the students add a sentence to their before/after pictures to explain why the beads changed color. Depending on the grade and level of your students you may vary the amount of information added to the boxes.

Before

My solar beads changed color because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

After