

# Sun Rays:

Students will learn about the sun by addressing these three questions: What is the sun? Why is the Sun important to plants, animals, and people? And What can we do to respect the Sun's power? The students will also perform an activity that illustrates the power of the sun's energy.

**Grade Level :** Kindergarten

## Objectives:

- Students will know that the sun is a giant star
- Students will be able to tell us why the sun is important to plants, animals and people
- Students will be able to explain one way to respect the sun's energy

## Materials:

- Laminated pictures of the sun
- UV Sun Beads
- Sunglasses
- Sunscreen
- Pipe cleaners
- Sun print paper
- 109 Cheerios

## Time Considerations

Preparations: 15 minutes

Who needs the sun?: 10 mins

Solar Beads: 15 mins

UV Test: 10 mins

Sun prints: 15 Minutes

Sun Song: 5 Minutes

## Related Activities:

Life Box (PLT), Plants and the Sun, Solar Matters



## Nevada Department of Education Standards

- **E.2.A.3.- Students know weather changes from day to day and seasonally.**
- **L.2.C.1.– Students know plants and animals need certain resources for energy and growth.**

## Excellence in Environmental Education Guidelines

- **Strand 1-Questioning, Analysis and Interpretation Skills (A, B, C, G): Learners are able to develop questions that help them learn about the environment, design simple investigations, locate and collect information about the environment and environmental topics and develop simple explanations that address their questions about the environment.**

## Background

Exploring science is a wonderful way for children to develop problem-solving, observation, and critical-thinking skills. And where better to do this than outside in the sun? In fact, a great topic to explore is the sun itself! The sun is the biggest, brightest, and hottest source of energy available to us on the earth. Did you know that the sun is actually a star? The sun is a giant ball of gas. These gases undergo a process called Nuclear Fusion. Nuclear Fusion produces a tremendous amount of energy much of which comes to us in the form of heat and light. The energy from the sun heats our world and makes life possible. Did you know that the sun is so bright that it will damage your eyes if you look directly at it? The light from the sun can also hurt your skin. Have you ever had a sunburn? Although sun rays can hurt our bodies if we aren't careful, nothing would be

able to live on the Earth without the energy we get from the sun!

## Preparations

Fill a baggie with a hundred and nine cheerios. Gather laminated sun pictures, sun beads, sunglasses, sunscreen, regular beads, and string.

## Doing the Activity

### Activity 1—

### Who Needs the Sun?

Ask students:

- When you are cold, what kinds of things or activities help you to stay warm?
- What helps you to stay warm when you are indoors? Outdoors?
- Is it usually warmer during the day or night? Why?
- What is the sun? *The sun is a star that is about 4.5 billion years old. It's like the stars that we see at night, but it is*



sleeve. Let paper and object stay out in the sun for at least five minutes. Remove plastic and object from the sun print paper.

Rinse with cold water to “fix” image. How does it work? *The sun print paper is coated with light-sensitive chemicals, which react to light waves and particles when exposed to light. When you place objects on the paper, they block the light and turn white, while the paper around them remains blue. Water stops the process and fixes your images on the paper.*

### **Activity 6—Sun Song**

Sing this sun song with the students to introduce the concept of day and night:

The sun makes the outside a warm place to play  
(arms above head in circle)

It makes the flowers grow each day  
(holding up hands wiggling fingers)

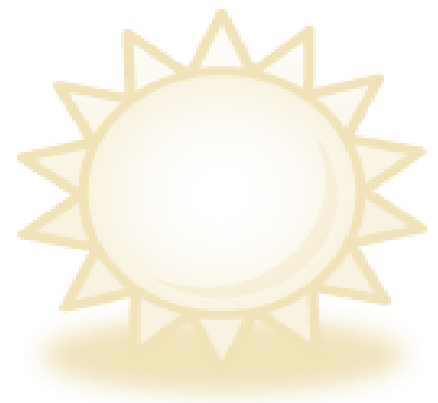
The sun hides its face during the night  
(cover face with hands)

But during the daytime it shines - oh so bright  
(arms above head in circle)

### **Evaluations—**

Assess the students on how well they can answer these questions:

1. What is the Sun?
2. Why is the Sun important to plants, animals, and people?
3. What can we do to respect the Sun’s power?



way closer.

- *Where is the sun? The sun is in the middle of the solar system. What is the solar system? The sun surrounded by celestial objects, such as planets, bound to the sun by gravity.*
- *What important things does the sun do? The sun provides the earth and its people, plants and animals the light and heat they need to grow and survive.*
- *What kinds of things does the sun allow you to do every day? Stay warm, grow food, swimming, (everything).*

### **Activity 2— BOOK**

#### **Activity 3—Solar Bracelets**

Show the students the UV sun beads and ask them what color they are? Let each student have ten regular beads and three solar beads to make a bracelet using a pipe cleaner. Ask the students what they think will happen to the solar beads that are on their bracelet if they put them in the sunlight? *The UV-sensitive beads contain a pigment that changes color when exposed to ultraviolet radiation from the sun.*

#### **Activity 4—UV Test**

Use the beads to teach kids about the sun’s ultraviolet radiation and the care that needs to be taken to prevent the damage it may cause.

Ultraviolet (UV) light is the invisible radiation that will give you a sunburn and injure your eyes if you’re not careful. Sunglasses and sunscreens absorb UV photons. Test their protective qualities by using your UV detecting beads. Place your sunglasses in the sunlight and cover a few of the solar beads with the lenses. If the beads remain white, then your sunglasses are blocking harmful ultraviolet rays. Also, test the effectiveness of your sunscreen by coating a few of the beads and placing them in the sunlight. If they change color, better buy some more cream! After the students see how the beads change color ask them these questions:

- Can the sun cause their own skin to change color? *Yes, sun tan or sunburn.*
- Can the sun’s UV radiation be harmful to us? *Yes, it can be harmful to both your skin and eyes.*
- What can we do to help protect our bodies from the sun’s UV radiation? *Wear sunscreen, sunglasses, a hat, etc.*

#### **Activity 5—Sun Prints**

Give each student a 4” by 4” piece of sun print paper. Let them choose something small to put on it, like a rock, leaf, or flower. Lay the paper out in the sun with object on top of the paper. If it’s windy, you can cover the paper and objects with a clear plastic binder

## Extension Activities—

### Summer Time Poster!

- Have the students draw a picture of their favorite thing to do during the summer time.

### Amazing Sun Facts!

- Help the students learn how much bigger the sun is compared to Earth. Our sun is about 870,000 miles in diameter (across its middle)! That is 109 times as big as earth. To help your kids understand how big the sun is compared to the earth, help them count out 109 Cheerios and then line them up in a straight line on the floor. Explain that if Earth were as tiny as 1 Cheerio, the sun would be as big across its middle as the line of 109 Cheerios.

## Vocabulary

**Brightness:** light or color that is strong and can be seen clearly

**Color:** a property of an object that reflects light of a certain wave length

**Energy:** power from coal, electricity, sun, or other sources that makes machines work and produces heat

**Heat:** great warmth

**Plant:** a living organism with a green pigment called chlorophyll that allows the organism to make food from the energy of the sun

**Star:** a ball of burning gases in space

## Sources—

The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2000 by Houghton Mifflin Company. Published by Houghton Mifflin Company.

Steve Spangler Science. "UV Beads and Sun Print Paper." <http://www.stevespanglerscience.com> (28 July, 2008).

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