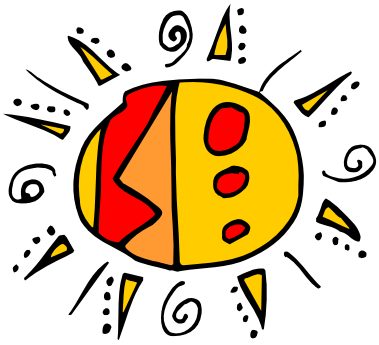
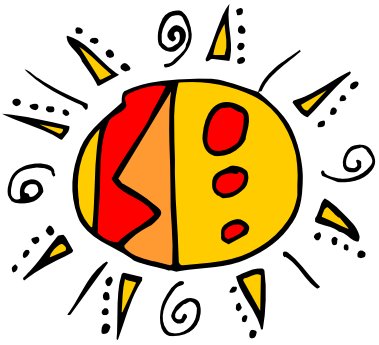


The Sun



A Thematic Unit Created By:
Marcy Steele

Activity: Day Sky, Night Sky

Materials: Magazines
Scissors
Glue
Poster Board (2) one blue one black.
"In The Sky" mini-book

Description: Ask the students to think about the kinds of things they see in the sky during the day and at night. Have them work in small groups to cut out pictures of things seen in the day time sky and in the night time sky. Come together as a whole group. Have students share their findings and glue them onto the large poster boards labeled Day time sky (blue) and Night time sky (black).

Extension: Have students illustrate their findings in their science journal. Have students put together the "In the Sky" mini-book and then read with a partner.

Activity: What is a star?

Materials: Chart Paper divided in half
Markers
Resource books on stars
Student made book on stars
Black const. paper
White paint in a spray bottle

Description: **Recite "Twinkle, Twinkle Little Star" with the students.**

Discuss: Have you ever wondered about stars? What do you think the writer of the poem was thinking when they wrote the poem? What do you think stars are made of? Encourage discussion amongst the students to further their knowledge about stars. Any questions that arise about stars record on the left hand side of the chart paper.

Have several resource books available on stars such as:
How far is a star? By Sidney Rosen
Do stars have points? By Melvin and Gilda Berger
And Seeing Stars by James Muridan

Read one of the books to the students and have them listen for any answers to the questions that were recorded on the chart. Record answers on the right hand side of the chart paper.
Have students make their own book on stars (see resource packet). Use a black construction paper cover and a spray bottle filled with watered down white paint. Spray the paint onto the construction paper to create a starry background for the cover of the book. Use this book for a reading extension activity.

Extension Activity: Use a candle to model a star. Turn the lights off (a dark room works best) have the students tell what they see. Light the candle now have them tell what they can see. Have them describe the light source. Have them take turns placing their hand close to the candle flame and ask them what they feel (heat) Ask students to explain where the heat is coming from. (The candle is burning and it is hot.)
Have students explain how a candle is like what happens with a star. (Stars are burning and they make light, they give us heat) You might have to explain that we can only feel the sun's heat because it is close. The other stars are too far away for us to feel their heat.

*** Remind students never to use candles or matches without adult supervision.

Activity: Introduce the sun using Power Point Presentation

Materials: Computer
Power Point presentation: The Sun

Description: Teacher will show the power point presentation to the students on the sun. The presentation will introduce the main topics that will be discussed throughout the unit.

Activity: KWL Chart on "The Sun"

Materials: KWL Chart
Pencils

Description: After viewing the Power point presentation on "The Sun" the students will complete a KWL chart. They will brainstorm what they already know about the sun, identify any questions they might have about the sun and what they would like to learn about the sun. These KWL sheets will be in their science journal so they can refer back to them throughout the unit. Any questions the students have will be written on index cards and taped to a large cut out of the sun. These questions will be referred to and answered throughout the unit.

Activity: What is the sun?

Materials: Why do we need the sun "science journal"
Pencils
Crayons
Sun Cutout
Books on the sun (2-3 for each group)
Chart paper, markers

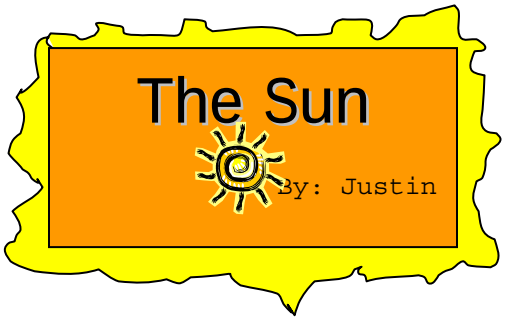
Description: **Students work together in small groups using resource books on the sun. They work together to find information about the sun. The students write down 4 facts they have learned about the sun and write them on their yellow sun cut out. The class meets back as a group and the students take turns sharing their findings, record facts onto chart paper.**

Activity Extension: Work with students to record facts into a Power Point Presentation on "The Sun".

Activity: Our Sun

Materials: Crayons
Scissors
Orange paper
Yellow paper
Stapler
Sun book (see attached resources)

Description: **Have students make a book about the sun. Color the pages. Fold 9 X 12 orange paper in half to create the cover of the book. Staple the book at the top. Use the yellow paper to draw the outer edges of the sun and then glue onto the orange book. When books are completed have the students read them with a partner and then fill in the blanks using the information they have learned.**



Activity: Why do we need the sun?

Materials: Chart paper
Energy from the Sun mini-book
Crayons
Pencils
Scissors

Description: **Lead a discussion with students and record answers on chart paper.**

Why is the sun important to Earth?
Use guided questions to assist students in understanding that:
Plants need light to grow
People and animals need plants for food
We need heat from the sun otherwise Earth would be too cold and plants, animals and humans would not survive

Read and discuss the mini-book "Energy from the Sun"

Ask students to recall the information they have learned about the sun and record their comments on the chart.

Activity: How big is the sun?

Materials:

Butcher paper
paint (red, orange, yellow) sponges brushes etc.
yellow cellophane
markers, scissors, glue
parts of the sun nametags (attached sheet)

Description:

*****Ahead of time prepare a large bulletin board with black paper as the background. Use white paint (slightly watered down) and spray onto the black paper creating a galaxy effect.**

Start off by reading *The Sun* By: Seymour Simon to introduce the parts of the sun. Cut out a large circle to represent the sun (butcher paper works best). Have the students join in the painting of the sun using yellow, red and orange tempra paint. It is helpful to have books with images of the sun readily available for the students to look at while painting. While painting the sun, discuss different features of the sun such as the corona, solar flares, sunspots etc. that might be visible in the pictures in the books and be sure to include these aspects into the painting. The yellow cellophane can be stapled onto the bulletin board to create solar flares and the corona. Let the sun dry over night.

Part II

The next day encourage students to recall information they have learned about the sun and use the Parts of the Sun Labels to correctly identify the different parts of the sun. Display the sun on the previously prepared bulletin board in the classroom. This bulletin Board will be added to and changed throughout the unit and the students will constantly be referring to it.

Extension: Students can create their own sun by painting it onto black construction paper and then cutting out the labels to label the parts of the sun.

Activity: How big is the sun?

Materials: Yellow butcher paper cut into a circle diameter 54.5 inches
Avery adhesive labels (round blue) ½ inch
4 small pins

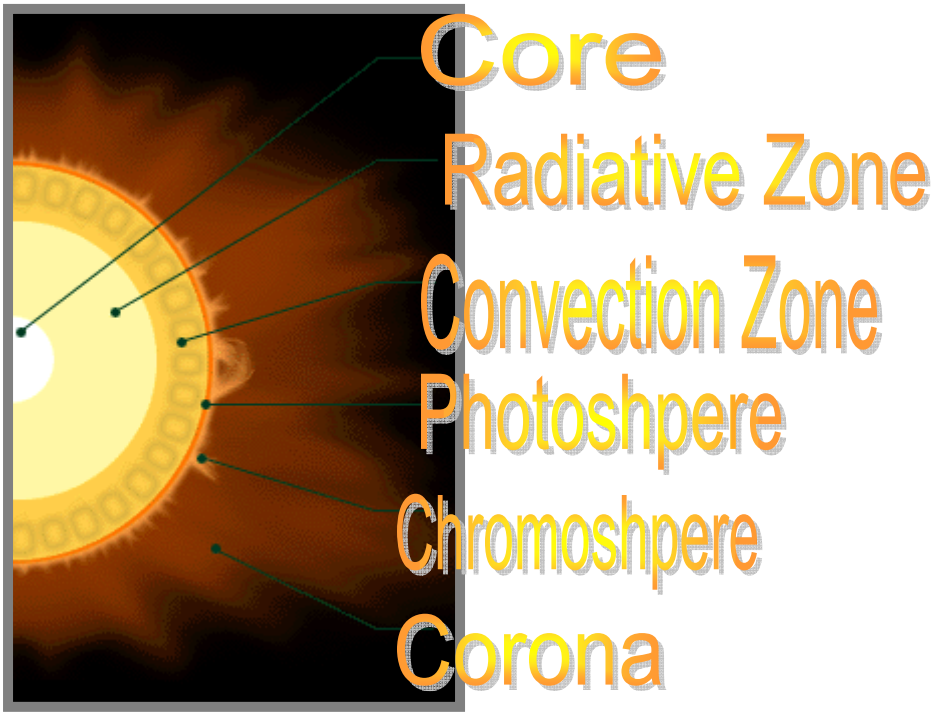
Description: Discuss with students the relative size of the sun. Is it bigger than the Earth? Smaller? Etc. Show students the cut out of the sun and tell them that this is a model to compare the size of the sun to the size of the Earth. After showing the students the sun, ask them to locate something around the room (with their eyes) that they think would be similar to the size of the Earth. After discussing with the students, show them one blue circle (Avery adhesives ½ inch) and tell them that if the large yellow circle represents the sun then one blue sticker would equal the size of the Earth. Have students estimate how many earths could fit along the Sun's equator. Record guesses, then, allow students to place stickers along the sun's equator line. After the last one is placed have students count. This

works best if you put them in groups of 10. At the end you should have apx. 109 Earth's that span the diameter of the sun. After comparing the sun to the Earth then ask students how large they think the moon is. Then show them that it takes 4 moons (Pin heads) to span the diameter of the Earth.

Extension Activity:
This model of comparative sizes is an excellent way to reinforce mathematical concepts such as "greater than", "less than", "equal to."
Resource: How big is the sun? worksheet. Students can break into small groups and try to match <,>,= flashcards to the sentences on the How big is the Sun? worksheet. Later they can cut them out and glue onto the appropriate sentence.

Activity: Layers of the Sun

Materials: Jello
(white layer, yellow layer, orange layer, red layer, clear layer)
Large straws
Clear plastic cups (shallow ones work best)
Paper towels
Science Journal "Jello Sun Jigglers"



Description:

Pre-make Jello into clear plastic cups using (white (condensed milk recipe), yellow, orange, red, clear (white grape works best) Make enough cups for students to work in small groups (2-3) works best. Have the students examine the cups of Jello. Discuss layers and review the layers of the sun, go over the terminology of the different parts. Have the students use the large straw to extract a core sample assist them in squeezing it out onto their paper towel. Have students describe the layers they see. Relate the layers of the Jello to the layers of the sun. Have the students draw a picture of the layers they see into their science journal. Allow them to use the terminology to label the sun. When students are done have them taste the different layers of Jello and determine the flavor for each layer.

Activity: Reflections

Materials: mirror
Flashlight
Science journal sheet: Where did the light go?

Description: **This activity can be done whole group as a demonstration or in partners depending on availability of materials.**

1. **I person holds a flashlight. A second person holds the mirror tilted slightly.**
2. **Turn off all lights and close curtains (this activity works best in a dark room)**
3. **The flashlight points directly at the mirror; turn the flashlight on.**
4. **Students observe what is happening to the beam of light.**
5. **Turn the lights back on and ask students to describe what they saw.**

Explain that the sun's light shines on the moon just like the flashlight shone on the mirror. The sunlight is reflected away from the moon just as the light was reflected off of the mirror. Neither the moon nor the mirror produces light. They both reflect light.

At the end of the demonstration students record what they observed by drawing the path of the light beam from the flashlight to the mirror and then the reflected light from the mirror.

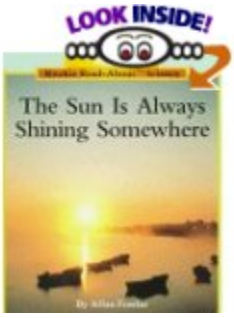
Activity: Day and night

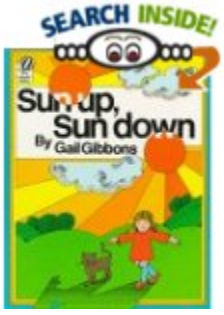
Materials: ***The Sun is Always Shining*** **by: Alan Fowler**
Sun Up, Sun Down **by: Gail Gibbons**
Globe
Lamp
Crayons
Scissors
Day and night mini-book
Construction paper
stapler

Description:

Discussion: "One of the things that we saw in the sky during the day was the sun (refer to the day, night posters made at the beginning of the unit.) Ask students; "Do you see the sun in the sky at night?" "Can you think of a reason why you can't see the sun?

Read and discuss
The Sun is Always Shining **by: Alan Fowler**
Sun Up, Sun Down **by: Gail Gibbons**





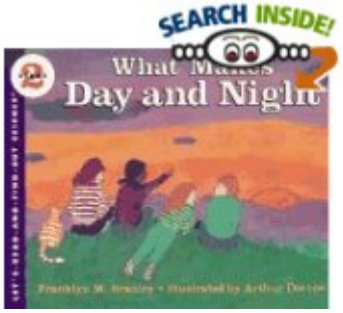
As the Earth Turns Demo:

As the Earth turns, the sun appears to be rising and setting. Help students to visualize this by doing the following activity.

Use a bright lamp or flashlight for the sun and a globe to illustrate the earth. Mark your current location on the globe with a sticker to give the students a better perspective of where they are in the world. In a dark room place the globe 6 feet away from the light source. Have the student slowly rotate the globe to the left until a full circle has been made. Have the students raise their hands when they see the sun shining on their part of the earth. Ask students to explain what they have learned about day and night and record their responses on the chart.

Activity: Day and Night

Materials: Day and Night mini book
Scissors
Crayons
Construction paper
Stapler

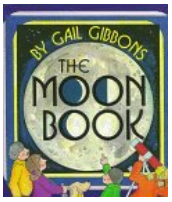


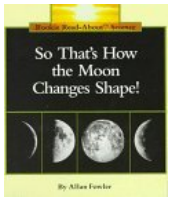
Description: **Read: What Makes Day and Night?**

Read and color the mini-book Day and night, review what the students have learned about day and night, record responses on chart paper.

Activity: Moon Changes

Materials: Moon Watch Worksheet
Bulletin board Display
The Moon Book By: Gail Gibbons
So That's How the Moon Changes Shape By: Alan Fowler

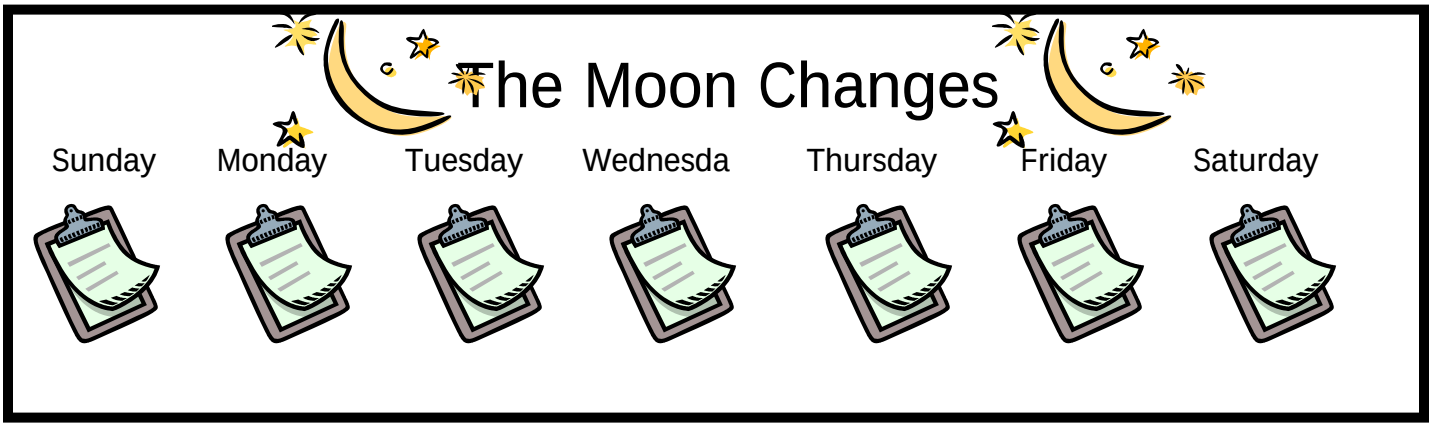




Description:

Read and discuss *The Moon Book* By: Gail Gibbons.

Ask students to recall any information they have learned about our moon. Explain that the moon looks a little different each day. Make a large "moon Calendar on a bulletin board in the classroom. Assign one student each night to record what the moon looked like onto the take home sheet: Moon Watch. Attach the returned moon sheets onto the bulletin board for a complete look at the cycle of changes or phases of the moon. (see below)



Extension: Have students make the Phases of the moon wheel to take home and monitor the changing moon.

Activity: Solar Eclipse

Materials: *Eclipse-Darkness in Daytime* By: Franklyn Branley

Description:

After reading the book *Eclipse-Darkness in Daytime* By: Franklyn Branley, ask the students "What happens to the sun during an eclipse?" "How does this happen?"

Then model a solar eclipse

1. **Select a student to hold the globe (Earth), the moon (soccer ball) and the lamp (sun)**
2. **The Earth and the sun will remain still as the moon orbits the Earth. The person representing the Earth will see the eclipse as the moon passes directly in front of the sun.**

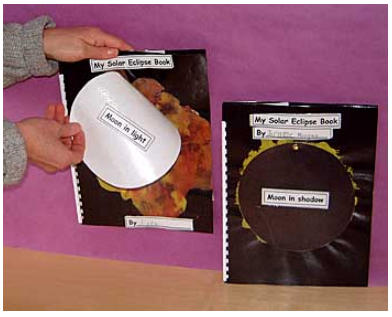
3. **Repeat with other students taking turns holding the globe and watching the moon pass and cause an eclipse.**

Activity: Solar Eclipse

Materials: Construction paper
Scissors
Paint
Glue
Pencils

Description: **After demonstrating how a solar eclipse is formed have students create a solar eclipse book that mimics their observation of the eclipse.**

Samples of "My Solar Eclipse Book"



Activity: What makes a shadow?

Materials: pencils
Crayons
Chalk
Shadows work sheet
Lamp

Resource: http://www.eyeonthesky.org

Description:

Begin the discussion of shadows by asking students what they know about them. These points can be listed on the "What we Know" section of a "Shadows" KWL chart. Students may bring up the following points:

- It is very dangerous to look at the Sun.
- We NEVER look directly at the Sun!
- The Sun creates shadows.
- We all make shadows.
- If there is sunshine, there will be shadows.
- Without the Sun, we would not have shadows.
- If the Sun is shining behind us, we will see our shadows in front of us.
- A shadow occurs, when an object (or a person) gets between the Sun and the surface of the Earth.

Ask students if they have any questions about shadows. List 3-4 of them on the "What We Want to Know" section of the KWL chart. Explain that students will be going outside to observe shadows and make drawings of what they see. Ask for a student volunteer help you demonstrate how to trace a shadow. Turn on the lamp, turn off the overhead lights, and ask students to observe the student's shadow being cast in the classroom. Ask them where the light source is and where the shadow is cast. Explain that the Sun is similar to the light and discuss the location of the shadow. Demonstrate how to trace the shadow by following the outline of the student's shadow with your finger. Explain that each student will use chalk to trace the outline of his or her partner's shadow on the playground. Tell students that after the tracing is complete, they can use pencils to draw their partner, his or her shadow, and the location of the

Sun on their work sheets. Remind students NEVER to look directly at the Sun. After students have drawn on their work sheets they can add more detail in the classroom with crayons. You may find it useful to print out a sample of student work sheet to show your students.

Outdoor Hands on Activity

1. Remind students again, NEVER to look directly at the Sun, but to concentrate on the shadows.
2. In pairs, students spread out over the yard. Distribute chalk.
3. Ask students to position themselves to make shadows.
4. Begin tracing by outlining partner's shoes--this is especially important if doing the extension activity in this lesson.
5. As students complete the shadow tracing with chalk on the playground surface, distribute the work sheet.
6. Make sure that each student gets the opportunity to create a shadow and also document the shadow of a classmate.

Extension Activity: Changing Shadows

Two or three hours after students have completed their first shadow tracings, explain that they will go outside again to observe their partner's shadow and make tracings of what they see. Ask students to predict if the second shadows will be the same as or different from the first shadows they drew. Ask for a show of hands and take a tally of students' predictions. Return to the playground and ask students to find their shadows. Distribute chalk. Remind students again, NEVER to look directly at the Sun, but to concentrate on the shadows. Have students reposition themselves in their original locations, using their shoe outlines as a guide. Ask students to complete the second shadow tracing. If time allows, redistribute student work sheets and have students add the second shadow.

The following questions can guide a discussion of what students observed:

- Did anything change in your tracings? What looks different?

- How many of your shadows moved? Tally raised hands. Review the tally taken in the morning and see how many students predicted correctly.
- What do you think made the shadows move? How can you explain that?
- Did the Sun move? Did we move? (Of course, we moved! Explain to students that shadows move as a result of the Earth's motion.)
- Ask students what else they have learned and want to add to their KWL chart. Place any new questions on the chart and check if any previous questions can now be answered!

Activity: Sundials

Materials: 9 inch paper plate
4 inch plastic straw
Colored pencils
Rulers
Tape
Chalk
Scissors
Watch
Sundial data sheet

Resource: http://www.eyeonthesky.org

Description: **Building Sundials**

Explain to students that they will build sundials and collect data based on their observations. Modeling the steps to building the sundial will make it easier for young students to complete the task. Distribute plates, straws, pencils, rulers, scissors and tape to students. Ask students to find the center of the paper plate and mark it with a dot. With a pencil have students place 4 registration marks along the edge of the paper plate (see photos). Make one mark longer than the others. These marks will help students reposition their sundials for taking measurements throughout the activity.

Ask students to make 4 1/2-inch cuts in one end of the straw section. Flare out the cut portion of the straw tape it onto the center of the

paper plate. The straw should perpendicular to the surface of the plate. Measure and cut the straw to a 2-inch length.

Using the Sundial to Collect Data

Day 1:

1. In the morning distribute pencils, rulers, chalk and sundials to students.
2. Ask students to place their sundials in a sunny spot on the playground. Mark the playground with chalk at the 4 registration points on the edge of their sundials. Remember to make one of the chalk marks longer so the sundials can be correctly repositioned. (See photos)
3. Have students carefully trace the straw's shadow with a pencil. Ask them to darken in the shadow with the pencil and write the time at the tip of the shadow.
4. Ask students to note where the Sun is in the sky. Warn them NOT to look directly at it.
5. After tracing ask students measure the shadow length and fill in their data sheets.
6. Students will take more measurements later in the morning, at midday, and in the early afternoon.
7. At the end of the day, ask students to predict where they think shadows will fall in the late afternoon. Ask them to look at their sundials and guess where the shadow would be at 2 PM (or any other afternoon time). Using a red pencil, have them outline the predicted shadow on their sundials.

Day Two:

1. Return the sundials to their marked locations on the playground the next afternoon, align registration points, and see if the student guesses for the 2 PM shadow were correct.
2. Students may trace the real shadow to help compare it with their guesses.

Post-Activity Discussion Questions:

Students use their data work sheets during this discussion.

1. What did you observe? What did the shadows do?
2. When was the shadow the longest? Where was the Sun?
3. When was the shadow the shortest? Where was the Sun?
4. Why do you think the shadows change length? How can you explain what you are observing?
5. How could you use a shadow to tell the time of day?
6. How accurate were your predictions? What could you do to make them more accurate?

Extension: Use Kinesthetic Astronomy Packet

This is a valuable resource to illustrate how the Earth rotates around the sun. Use it to give students a perspective on the Earth's rotation.