Out of this World

Summary

Students will be able to see and describe changes in the daytime and nighttime skies.

Materials

Crayons
Markers
- Sunrise/sunset journals (pdf)
- Moon journal (pdf)

Butcher paper

Books:
- *The Moon Seems to Change*
  , by Franklyn Branley, ISBN: 9780064450652
- *The Magic School Bus Lost in the Solar System*
  , by Joanna Cole, ISBN: 0590414291
- *Our Solar System*
  , by Seymour Simon, ISBN: 0688099920
- *The Sun*
  , by Seymour Simon, ISBN: 0688092365
- *Day Light, Night Light*
  , by Franklyn Branley, ISBN: 0590512609
- *Night Sky*
  , by Carole Stott, ISBN: 078942214X
- *Sun and Moon*
  , by Robert Gardner, ISBN: 9780766027367
- *Earth and Earth's Moon*
  , by World Book Exploration Library, ISBN: 9780716695127

Media:
- *Magic School Bus Sees Stars*
  , access from UEN EMedia
- *Magic School Bus Out of this World*
  , access from UEN EMedia

Background for Teachers

The moon orbits the Earth as the Earth orbits the sun. We can see the moon most nights, and often during the day, too. The moon changes shape in a 29½ day cycle. The different shapes we see of the moon are called its phases.
You can see surface details on the Moon even in the daytime and you do not need any special equipment. Because the moon has no atmosphere, there are no moon clouds to spoil your view. The dark patches you see are lowlands; the brighter areas are highlands

Intended Learning Outcomes

1. Demonstrate a positive learning attitude.
2. Develop social skills and ethical responsibility.
5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written, and nonverbal form.

Instructional Procedures

Content Connections:

Language Arts VII and VIII; Math III

Invitation to Learn:

Ask students to list things that they can see in the daytime sky. What things can you see in the nighttime sky?

Instructional Procedures:

Daytime Sky/Nighttime Sky:

Give each student one sheet of paper. Assign half of them to draw a picture of the daytime sky and the other half to draw a picture of the nighttime sky.

After pictures are drawn, have students share. Ask questions such as: What does the sun look like? What does the moon look like? Why did you put that in the daytime sky/nighttime sky? Is there anything that we could add to the different skies?

Ask a few students to draw on the board what they think the moon looks like. Ask others to draw what they think the sun looks like.

Ask students: Can you see the sun during the day? How about at night? Can you see the moon at night? How about during the day?

Tell students that sometimes the moon can be seen in the day.

Provide them with the moon journal page and explain it.

Go out every day and see if the moon is visible. If it is, have students draw a picture of what it looks like.

One day when the moon is visible, give students a clipboard and paper. Have them draw the moon in detail.

Make a graph of your findings.

Note: You can access moonand sunrise andset times at the Old Farmers'Almanac at Almanac.com.

Sunrise Sunset:

Ask students if they have ever noticed that sometimes the sun goes down really early in the day.

Talk about how in the winter the sun in not up very much, but in the summer the sun stays up longer.

Ask, Where did the sun rise this morning? Where will it set tonight?

Tell students they are going to chart the sunrise and the sunset times for two weeks. Do this twice in the year during different seasons.

Make graphs and notice the difference in daylight hours.

Shadows Change:

Talk about how the sun moves across the sky. This changes shadows.

Explain the activity for today and have students make predictions about what will happen to their shadows as you return outside throughout the day.

Give each student a partner and a large piece of butcher paper with an X in the middle. The paper needs to be large enough for them to trace shadows. Give them a marker or crayon.

Take the class outside in the morning. Place the paper on the ground and have one student stand on the X on the butcher paper. His/her partner will trace his/her shadow.

Switch and have the other student stand on the paper and get his/her shadow traced.

Continue this activity by returning to the same location at two other times in the day. Each time you go outside, make sure everyone has a different color marker or crayon.

Talk about the predictions you made this morning. Were they right? What might you change now that you have done the experiment?

Lesson and Activity Time Schedule:

Each lesson is 55 minutes.

Each activity is 30 minutes.
Total lesson and activity time is 90 minutes.

Activity Connected to Lesson:

Sundials have been used as timekeeping devices for thousands of years. Talk with students about the shadow activity you did. Ask, "What happened to shadows as the sun changed positions in the sky? What kind of path does the sun follow in the sky?" Now show them the sundial. Ask, "What do you think will happen if we placed this outside? Will this be able to help us know what time it is?" List predictions. Have each student make his or her own sundial. Place them outside. (You may need to tape them down.) Check them each hour throughout the day. Record findings on the sundial sheet. Talk about predictions that were made.

To make the sundials, students cut out the sundial and the pointer with numbers on it. The other one is extra. Fold the pointer on the dotted lines. Tape it on the sundial where the numbers indicate.

Activity Materials:

- Sundial (pdf)
  Tape
- Sundial sheet (pdf)

Extensions

Teach students about directions.
Teach about the phases of the moon.
Provide books from your media center about the sun and moon. Invite students to write a small report (3 or 4 sentences) about their findings.
Bring in a model of the solar system and see if students can identify the sun and where the moon should be.

Family Connections:

Assignments to do with parents:

Send home a letter explaining what your unit is about. Mention that students can watch sunrise and sunset times longer than the time indicated by the worksheets.
Have students draw a detailed picture of the nighttime sky they see from their house.
Send home pictures of items you see in the skies and have students play a memory game.

Assessment Plan

Use the sunrise, sunset and moon journals as an assessment.
Create a worksheet.
Use the pictures students made of the daytime and nighttime skies.
Observe students as they work.
Provide pictures of things and ask students to tell you in which sky they would see that particular item.

Authors

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