Moon Watch

Summary

The moon is our nearest neighbor and appears to move across the sky every 28 days. Students will chart the face of the moon as it travels and investigate the motions of earth to produce these interesting changes in our nearest neighbor.

Time Frame

10 class periods of 15 minutes each

Group Size

Individual

Life Skills

Thinking & Reasoning, Communication

Materials

- Book, The Moon Seems to Change, by Franklyn M Branley, or another that will introduce the topic.
- Blank calendar for each student prepared to fit current lunar cycle with spaces for drawing phases of the moon. (Determine what the moon will look like for the 28 days of this lesson. Often the lunar cycle will be posted in the newspaper.)
- Optional: Moon phase pictures from NASA
- A variety of materials on the phases of the moon.
- Dark blue or black strip of butcher paper to create a border or timeline about five inches high that will record the moon's changes through the month. Display sign that says "Moon Watch" above the strip of dark paper.

Background for Teachers

This activity will help students observe the predictable pattern of the moon's phases. Students will record their observations in the month prior to investigations that take place in the classroom.
A star, such as the sun, burns gases that give off heat and light and a planet reflects sunlight. The moon is different from the sun and similar to the earth since it is made of rock and dust, has no light of its own to shine, and is only bright in the night sky because it reflects the sun's light. When we see the moon at night, what we actually see is the reflection of the sun's light on the moon. The shape of the moon appears to change at different times of the month, gradually moving through its phases from a small crescent moon to a half moon to a full moon. Of course, the shape of the moon doesn't really change; the phases of the moon are caused by the moon moving around the Earth so that we see more and more of the portion that is illuminated by the sun.

Student Prior Knowledge

Students will need to understand the shape of Earth and the moon as spherical, and understand that the sun plays an important part in the moon's appearance.

Intended Learning Outcomes

Observe objects and report their observations.
Compare things and events.

Use observations to construct a reasonable explanation.
Pose questions about objects, events, and processes.
Record data accurately when given the appropriate form and format.

Instructional Procedures

Step 1. With the class as a group, review the shape of the earth and the moon as spherical. Remind them with visual models. Discuss the importance of the sun as a source of light, and the concept that the moon reflects its light. (This is presented in the lesson plan, "Bouncing Sunlight.")
Step 2. Share with students the book, The Moon Seems to Change, by Franklyn Branley. Tell students that each of them will be doing some observations of the moon at home during the evening. Observations will need to take place about the same time and from the same location every time. These observations will need to include drawings of what the moon looks like. They will need to keep track of their observations for almost a month. Pass out the calendar. Explain how each day has space for a small drawing of what they see. Any questions they might have should be listed on the back of their calendar.
Step 3. Show the students the strip of dark butcher paper you have put up on the wall like a "time line." Explain that each day, one student will take a turn recording observations from the night before on the paper. (Divide the job so everyone has an opportunity as the month progresses.)This will provide a time line of the moon watching they do.
Step 4. As the lunar month progresses, take time each day to discuss what the "Moon Watch" chart looks like. They might also want to write down any questions they have underneath as the days go by. Questions might include such things as "Why does it change shape?" "If the moon is a sphere, why does it disappear and change so much?" "Where does the rest of it go?" "Why is the moon moving in the sky?" Lead students to make predications about the moon changes. (Some possible predictions might be that the moon "grows and shrinks," or "disappears".) Record all possibilities on the board.
Step 5. As pictures are drawn and questions are asked, encourage students to do research on the moon. Try to provide a center where materials are available to read, and find information.
Step 6. When the month is almost over, ask them if they can predict what shape the moon will have the next night. Discuss the next day if predictions were correct.
Step 7. At the conclusion of the activity, bring students together to look at the Moon Watch time line. Discuss how the moon changes. Encourage students to share information they have learned from their research and investigations. Discuss where the moon was in the sky during observations. Does this help us know that the Earth is rotating on its axis and makes things appear to move across the sky? Ask why there is a time when the moon is not visible in the sky at all. (The reason is that the side of the moon facing Earth is completely unlit by the sun.)
Step 8. If students have not discovered that the moon in phases occurs because it is orbiting the Earth, you can demonstrate briefly with models such as you used in "Bouncing Sunlight." There are also great web sites with excellent visual aids to show students how the moon travels and the earth orbits.

Strategies for Diverse Learners

Students from different cultures could share the legends they have heard about the moon with the class.

Extensions

Have students create a dramatic pantomime of the phases of the moon. Use music from "2001 Space Odessy", or something that sounds like "outer space." Have them recreate the phases of the moon through the actions of several students. Include an earth and a sun so the entire process is enacted.

This should be an accurate portrayal, not a creative one.
Students could research the legends of ancient cultures about the moon and report their findings in some way to the group. A report, a pamphlet, or collection are visual possibilities. Others might include puppets, role-play or research report. The project needs to include some aspect of the moon changing and reasons these civilizations used to explain the phenomena.

Assessment Plan

On a dark piece of paper, have students draw, or use chalk to show their favorite part of this activity and the phase of the moon they think is the best. Under their drawings have them write two sentences explaining the moon's movement. Their sentences should say something like "the moon changed shapes and moved every night." All children will be at different stages in their grasp of this concept. The objective does not say students need to explain WHY it occurs, just to observe and demonstrate the changes in the moon's shape. However, some students will know more than others. For example, one might state. "The moon seemed to move across the sky every night." Another student might state, "The earth rotates on an axis so the moon appears to move across the sky when it is really the earth that is moving." When helping students to proof their statements, correct all errors so that no misconceptions continue .

Bibliography

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Gibbons, Gail, The Moon Book, 1997
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Authors

Jennifer Edwards
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