TRB 3:1 - Investigation 5 - Making a Sundial

Summary

Students will make a sundial and learn how to use it.

Materials

Paper plates
Triangles
Pencils, crayons
Tape
Scissors, glue
My Moon Book

Additional Resources

Books:

- *The Magic School Bus Inside the Earth*
  by Joanna Cole. Scholastic Inc., 1989.
- *On the Day You Were Born*
  by Debra Frasier. Hartcourt Brace and Co., 1991.
- *Our Planet Earth*
  by Claire Llewellyn. Scholastic, Inc., 1997.
- *You're Aboard Spaceship Earth*
  by Patricia Lauber. Harper Trophy, 1996.

Background for Teachers

Earth makes one complete rotation on its axis every 24 hours. During the 12 hours Earth faces the sun, the sun appears to move from the eastern horizon to the western horizon in a path across the sky. The sun is stationary with respect to the revolution of Earth. The sun's apparent movement is caused by Earth's rotation. A sundial can use the sun's shadow to measure time based on the position of the sun in the sky.

Intended Learning Outcomes

Use science process and thinking skills
Manifest scientic concepts and principles
Understand science concepts and principles
Communicate effectively using science language and reasoning

Instructional Procedures

Pre-Assessment/Invitation to Learn

Ask students if their shadows are always the same length or in the same place. Is it always the same length and shape? Do they notice anything about the time of day and the location and shape of their shadow?

Instructional Procedure

Have the students answer the first question on page 7 of their journals.
Make sundials by folding a flap along the long edge of the triangle.
Mark the center of the paper plate.
Glue the triangle to paper plate with the point in the center and wide end toward the outer edge of the plate.
Have students predict what will happen when they put their sundials in the sun.

Have them take their sundials outside or place on a windowsill exposed to the sun.
Have them mark the plate to show the position of the shadow.
Have students check their sundials two or three times during the day.
Tell them to draw the shadow cast by the sun on the dial each time.
Remind them NOT to move their sundials.
Have them glance at the sun and observe where the sun is each time.
Have students answer the second question on page 7 of their journals.

Extensions

Science-

Point the sundial to the north and use it to tell time. *(ILO 1)*

Language Arts-

Study other sundials used many years ago. *(Standard VII, Objective 3)*

Homework & Family Connections

Send home directions of how to make sundials. Students can show their family members how to make sundials.

At one of the websites above, go to "sundials" to see when sundials were rst made and all the different ways they were made.

Students can show family members how sundials work.

Assessment Plan

Response Questions:

Do you always see the sun in the same place?
Where is it at breakfast time?
Where is it at lunch?
Where is it when you are having dinner?
When it is cloudy, what happens to your shadow?

Observational descriptions in students journals:

This Surprised Me the Most (new idea)
I Really Like How it Looks (art)
I Thought This Would Be Hard (challenge)
We Did a Great Job Together (cooperative effort)

Check for accuracy on page 7 of their journals.

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