



Teacher Toolkit

Activity: Tracing the Shadows of the Sun

Presented by: Cincinnati Observatory

Grade Level(s) K - 5th grade

Activity Description

Observations about the position of the sun and its place in the sky can be made and compared to the shadows created on the earth. The time of day can even be predicted by observing the sun's position in the sky. This apparent motion of the sun can be a bit puzzling – is the sun moving, or is the Earth moving? This activity can help to launch an exploration of the relationship between the Earth and the Sun and make solid connection to the Sun.



Ohio Standards Met

- Science, Kindergarten: Daily and seasonal changes
- Science, Grade 1: Sun energy and weather
- Science, Grade 1: Motion and materials
- Science, Grade 5: Cycles and patterns in the solar system

Instructions

- Divide students in groups of 2-3.
- Explain to the group that today you will be taking a look at shadows. Each group will trace their shadows, comparing their shape and size and making predictions about the shadows. Will these shadows change throughout the day? How?

Thanks to Greater Cincinnati Environmental Educators (GCEE) for collecting activities for the Teacher Toolkit



Instructions (continued)

- Once outside on the concrete or blacktop have the groups of students trace each other's shadows using the sidewalk chalk. Make sure to tell the students to stand very still while their shadow is being traced with chalk. The student tracing the shadow should also trace around the feet of child whose shadow is being drawn, this will ensure that they know exactly where to stand later for comparison. Next to the outline of the shadow have the students write their name, time of day and the date.
- Ask the students to point in the sky to where the sun is (without looking directly at the sun!). Have the students create a drawing of the sun on the ground to indicate what position the sun is in the sky. The students should also note on their drawings the direction of the sunlight. Where is the sun? High or low? Is it close to a building or tree?
- Once each student has traced their shadow talk about what they experienced. Did the shadows look like they expected? Were the edges easy to trace? Are the shadows long or short?
- Determine what time you go back to check on the shadows they drew and ask the students to predict what will happen. Do they expect to see the shape or length of the shadows change? How so? What will happen to the sun? Will it be in the same place?
- Wait an hour or two and return to your outdoor area. Have the student repeat bullets 3 and 4. Make sure each student stands exactly in the same place as before.
- Finish up the activity by drawing conclusions and evaluate the student's predictions. What do they notice about the new tracings? How are they similar and different from the original tracing? Where is the sun in the sky at this point in the day? Discuss with the students the movement of the sun. What actually moved, the Earth or the sun? The important conclusion is that the length and position of shadows are directly related to the position and height of the sun in the sky.

Materials Needed

- A clear sunny day
- Sidewalk chalk
- Flat blacktop or concrete

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