



LESSON PLAN: ACTIVITY 2: BEAR SHADOW

In this activity students learn about shadows using literature-based discussion and experiences.

Materials

- *Bear Shadow* by Frank Asch

WARM-UP & PRE-ASSESSMENT

Review what students may have learned about shadows in the previous lesson or prompt a brief discussion based on some of the following questions:

- What are shadows?
- What does a shadow do?
- When do you have a shadow? Give some examples.
- If a shadow forms when you block light, why can you still see something in a shadow?

PROCEDURES

1. Organize the students into a reading area
2. Read *Bear Shadow* by Frank Asch, either individually or as a participatory exercise. In this story, a bear attempts to escape a shadow that seems to be chasing him. You might guide this discussion by asking questions based on the Warm-up, such as:
 - What did we just discuss about shadows that makes the book funny?
 - Why did Bear's shadow disappear when he hid behind a tree?
 - Why did the shadow disappear when Bear buried it? What do you think about that?
 - What makes a sun shadow fall one direction at one time and another direction at a different time of day?
 - What else do you have to say about shadows?
3. Use the responses to help the children shape activities through which they will discover the answers to their questions.



Teaching Tip

If you have already begun the study of shadows and have measured sun shadows (Activity 1-Shadows above) at least once, your discussion of Bear Shadow will be more specific. In addition to the kinds of questions above, you can, for example, discuss the time of day when the various events occur and the direction Bear's shadow will fall at these times.

DISCUSSION & REFLECTION

- Is your shadow always the same size (and/or shape) as you?
- Under what conditions does the size/shape of your shadow change?
- What factors might affect the size or shape of your shadow? How would it be affected?
- How could you test if your answer is right? [Alternatively, if several class members are offering different answers: How could we decide whose idea produces a better explanation?]

- Remember the MESSENGER spacecraft we talked about? [If you did not do Day 1, tell the students that we are sending up a rocket into space with a little spacecraft called MESSENGER. Since it won't have any shadows to rest in when it gets too hot, we had to build something to give it a shadow all the time; it look likes an umbrella and is called a sunshade.]

- Well, we're putting all sorts of cameras on MESSENGER to take pictures up in space! We don't want any of the cameras to break or to get hurt by all the hot sunlight, so when do you think is the safest, best time to use the cameras?

ASSESSMENT

Use the answers to the questions above as the basis of your assessment.





CURRICULUM CONNECTIONS

- Reading and Listening
- Reasoning and Logic Development
- Art

LESSON ADAPTATIONS

- Encourage students to experiment for a minute or two to test out some of their theories and ideas during discussions. Then have them return to the group and decide if they want to maintain their original comments, or change them to reflect what they discovered in their mini-experiments.

