

PINHOLE INVESTIGATIONS

Making a Pinhole Viewer

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This activity allows teachers to make "mobile" pinholes, so that they can go outside or wander around a building and examine familiar everyday objects through a pinhole. It's probably best to do this activity after teachers have already spent a good deal of time investigating pinholes with the materials from the Inquiry Starting Point-Tabletop Light Source Activity. Through this exploration, teachers will have begun to form hypotheses about what they are observing, and about what they can predict about pinholes. By using the mobile pinhole viewer, they can now look at familiar objects like trees and doorways to confirm for themselves that the image that comes through a pinhole is reversed-top to bottom, and left to right.

Materials Needed

(per viewer)

- 1 sheet of black construction paper, 9" x 12"
- 1 cardboard toilet tissue tube
- 1 piece of aluminum foil, approx. 4" x 4"
- 1 piece of waxed paper, approx. 4" x 4"
- 4 rubber bands

Making the Viewer

Place the aluminum foil over one end of the toilet tissue tube and secure it with a rubber band.

Place the waxed paper over the other end of the toilet tissue tube and secure it with a rubber band. Care should be taken to keep the waxed paper as smooth as possible; this will be the screen.

Roll the black construction paper lengthwise around the tube, keeping the aluminum foil end flush with the end of the construction paper. The waxed paper end of the tube will now be in the middle of the black construction paper tube. This black tube will allow you to see the images more clearly

Use a pin to make a hole in the aluminum foil. Sometimes the hole must be enlarged to see the image more distinctly, but it's better to start with a small hole and then make it larger if needed.

To Do and Notice

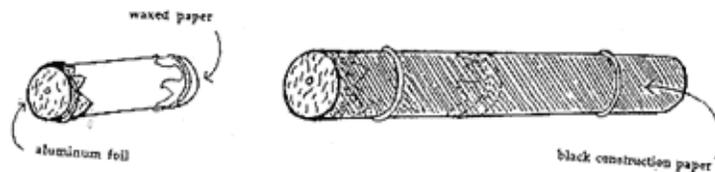
Take the viewer outside and look at houses, trees, cars, etc. through the open end of the tube. What do you notice about them?

Try the viewer inside. Look at a light or a candle. Try two light bulbs, one red and one green, placed at opposite ends of a light strip. What do you see through the viewer?

Discussion

Questions that come after looking through the viewer include:

- why is the image reversed?
- how can I make it turn right-side up?
- how can I make the image clearer?
- how can I make the image larger?
- what if I used a larger tube, (longer tube, larger hole, etc.)?



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