



Playground Zoom Lesson Plan

Overview

Children will observe and draw small objects on the playground or in the classroom with and without a magnifying glass to learn that visual remote sensing depends on using lenses. This lesson builds the foundation for children to understand how the Earth may be observed in great detail by satellites in orbit around our planet.

Suggested Lesson Sequence	Please see the Foundations: Maps and Images and Global Visions module descriptions.
Lesson Level	Entry
Science Connections	<ul style="list-style-type: none"> Students will explore how lenses can affect the way that an object is observed from afar, or “remotely sensed”. Students will observe nature from different visual perspectives on the school playground.
Math Connections	<ul style="list-style-type: none"> Students learn how to represent spatial patterns by drawing and describing them.
Technology Connections	<ul style="list-style-type: none"> Students will use a magnifying glass as a remote sensing tool to observe details in small objects.
Lesson Assessment Tools	<ul style="list-style-type: none"> Assessment and Standards Table (Word) Assessment Activity Description Extensions for Authentic Assessment

Materials

- Powerpoint Reader ([Windows / Mac](#)), and [Adobe Reader](#)
- Playground Zoom Activity Sheet ([Acrobat](#)) - one printed set per student
- Assessment Slideshow ([Powerpoint](#)). May be viewed via monitor, projector, or printed copies.
- Magnifying glasses or other similar magnifying devices

About the slideshow: The slideshow is not meant for students to read through on their own. It is intended to be viewed together, to outline and illustrate a discussion of the lesson's themes, led by the teacher. You might have a different student read each slide's text.

Vocabulary

- **Lens:** a clear object that is used to enable clearer or more detailed viewing. A lens bends and focuses light
- **Zoom:** a way to quickly see more detail (to "zoom in") or less detail (to "zoom out") when looking at an object
- **Magnify:** to make an object appear larger to the eye or to a camera
- **Magnifying glass:** a device that contains a lens that is held by hand to examine a close object in more detail.
- **Telescope:** a device containing one or more lenses that allows detailed study of far-away objects.
- **Astronaut:** a person who has the job of flying in outer space.

Vocabulary Note: students will likely be unfamiliar with other vocabulary presented in this lesson. This is done intentionally, to spur additional conversations and discussion about these words and their meanings. Encourage your students to ask about unfamiliar words.

Procedure

I. Assessing Prior Knowledge and Contextual Preparation

1. Introduce this lesson by talking about how we can change the way we see things with our eyes. Perhaps ask students to name some family members or friends they know who wear glasses. Some students themselves might have glasses to improve their eyesight, and some children may wish to share interesting stories about themselves or family members who lost or misplaced their glasses. During the discussion, ask questions that begin to challenge students to think about how glasses and other **lenses** are useful for seeing things close up or from far away. Lenses are devices that actually bend light, so that objects can be seen in more detail. In the case of glasses or contacts, lenses correct problems with how our own eyes bend the incoming light to create a clearer image that gets sent to our brain.

II. Student Activities

1. On the playground, children should look for small objects to observe and study. The objects may be living (e.g. leaves, flowers, moss, insects) or non-living (e.g. rocks, shells, sticks). (Note: this activity may also be done in the classroom using any common object.)
2. Using the Playground Zoom [Activity Sheet](#), children will observe and draw an object using their sense of sight. Drawing will help children become keen observers and notice details.
3. Children should then use a magnifying glass to observe and draw the same object. With this remote sensing tool, the child's sense of sight will be enhanced and they will be able to observe and "zoom-in" on smaller details.
4. Children should be given an opportunity to share and compare their two drawings. The teacher can lead a discussion of how remote sensing tools like a magnifying glass (or a telescope, or eyeglasses) can help extend our senses. Vocabulary words should be incorporated into this and other discussions.

Questions for Class Discussion

- What did you draw on the playground (or classroom) with your eyes? Can you describe your drawing?
- What did you draw on the playground (or classroom) using your magnifying glass? Can you describe your drawing?
- How do your two drawings compare?
- How does the magnifying glass help us observe small objects? What are some other types of lenses that people use to view or take pictures of objects?

III. Assessment Activity

Have students view the [Slide Show Assessment Activity](#) (either on a computer screen or on printed pages) and answer the associated questions by writing on a piece of paper (the back of the Activity Sheet may well serve this purpose). Photo descriptions are included on the final slide of the Photo Essay for the teacher's benefit and can be used as impetus for continued discussion (by comparison with maps, etc). The photo of the moon was taken by using a small telescope. You may wish to explain that a telescope is similar to a magnifying glass and is used to examine far-away objects in more detail.

Lesson Extensions for Authentic Assessment

- Ask students to tell and/or write a story (individually or as a class) imagining that they were an astronaut in a spaceship who could use a big magnifying glass to study the Earth in more detail. What part of the Earth would they choose to look at? What would they see?
- Bring other types of magnifying devices (such as binoculars, a spotting scope, microscope, telescope, reading glasses, camera with zoom lens, etc.) to class. Have students examine various objects using these "high tech magnifying glasses", and write a story about what they would like to do with these devices. What new magnifying devices would they invent?
- Fill a clear glass jar with tap water (or, if you have an aquarium in your classroom, this would happily suffice). Then, dip various objects into the water, and have students describe how objects look with and without being dipped into the water. Move the objects nearer and farther from the glass surface. What similarities exist between the water and the magnifying glass? What differences? Ask students to speculate how water could be used to examine objects in more detail. If your classroom or school has an aquarium, this would be an excellent opportunity for the students to examine how fish look as they are viewed from different angles through the glass.