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ROKET Lesson Plan

Subject Area(s): Earth Science, Math

Lesson Title: Scaling My Community

Grade Level 6 (4-6)

Time Required 30 minutes

Summary

This lesson introduces the use of scale to examine images. Particularly students will begin with familiar locations or areas generated using satellite maps (e.g. Google maps) to relate scale and magnification of a particular image. What happens to the scale when we zoom in on an image? What if the larger image is zoomed in to a very small scale? Students will draw a map of their community and subsequently zoom in on particular areas and adjust the scale.

Engineering Connection

Engineers examine various images such as maps or designs. It is important to understand the scale on such images when areas are zoomed in or magnified.

Keywords

Scale, Image

Educational Standards

State science:

State math:

Learning Objectives

After this lesson, students should be able to:

- **Understand the relationship between image and scale.**
- **Use scale measurements to draw an isolated section of a larger image and create a scale.**

Introduction / Motivation

We use images on a regular basis to gather information. Some images, such as map images, we use to determine location or direction. We may or may not use the scales often included on such images perhaps because we are familiar with an area or location. However, using scales can be critical when it comes to examining images, especially images on a microscopic scale.

Lesson Background & Concepts for Teachers

Basic skills with maps and scales.

Associated Activities

Choose a map image, note scale, create grid.

1. Students will choose a map satellite image using Google Maps, of their own community and print it on standard 8½" x 11" paper.
2. Students will locate the scale of the map and begin drawing squared gridlines matching the scale of the original map (e.g. If the scale is ½ inch=500ft, then the grid squares will be ½ x ½ inch.) Grid will be drawn directly on the map.
3. Students will then choose a single square and another square area larger than one ½ x ½ inch (e.g. a square equaling 1 in. x 1 in.)

4. Students will then draw each magnified area on a 8½” x 11” paper.

Art: Students will create an art journal of their maps.

Assessment

Pre-lesson: Ask students to brainstorm what information we get from a picture/image/map. How do we understand exactly what we are looking at? What can be different about images?

Optional: Show copies of image of an eggshell at different levels of magnification—a standard digital image of an eggshell, a magnified image 50X-150X, and an SEM image—and have students write what they think the image is in a journal.

Post-lesson: Students will produce to two magnified drawings of their original image in above mentioned activity.

Additional Multimedia Support

Optional: Show “Powers of 10” video if available to demonstrate concept magnification and zooming in and out.