

Sands

Directions and Supplies needed for this activity:

Variations of this activity can be used with students of different ages and interests. The basic information is below, as well as variations that we have used in classrooms. Students should be grouped into groups of two or three. Two is better.

Supplies needed:

- Sands, soils, or other sediments from various locations. These can either be mounted on a hole-punch slide or in plastic well slides. A free resource for sand from all over the world can be found here: <http://www.microscopy.org/education/projectmicro/SandCollection.cfm>
- 1 sand slide per group of students.
- 1 hand lens per group
- 1 dissecting microscope or Magiscope per group
- 1 copy of your choice of student hand-out per student
 - *Sands from around the world!*
 - *Solving mysteries with Sands from around the World*
- 1-2 pencils per student

For “Around the World” variation:

- Globe or map
- If you are going to continue exploration of sands from all over the world, you may want to mark where you’ve “been” with something like a star sticker

For “Solving a Mystery” variation:

- Unmarked slide of one of the sands or a mixture of 2+ sands (depending on age-group) to use as unknown or evidence
- For interest, you could have a shoe from which the evidence was gathered as a prop
- A good story, if you like, being careful to limit your story to a g-rated crime so as not to upset younger or more sensitive students.

Directions:

Show students how to use a hand lens correctly. A good way to introduce this is to have them look at something on their handouts with the eye and then the hand lens. Once everyone has had a chance to do this, ask them what they saw differently with the hand lens than with their eyes.

Pass out the sand samples and have student examine them with their eyes and then their hand lenses and record their observations on their hand-outs.

Introduce the dissecting microscope or the Magiscope. Show them how to fit the ocular lenses to their eyes and adjust the light (dissecting microscope) or how to maximize the light (Magiscope). Have them place the sand slide on the microscope stage and then show them how to focus the microscope until they have a clear image. Follow the hand-out to characterize the sands, then either have students pass the sand to the next group (pick whether you want them to pass to the left or to the right) or have students rotate so that students are able to see as many sands as possible, depending on time limitations.

- If doing the “Solving a Mystery” variation, introduce the idea of using sands/soils to solve crimes. Introduce the crime and evidence. Have students thoroughly examine their initial sand sample as per the hand-out, then rotate around the stations to examine all of the samples, including the evidence. How much time each student spends on each sample can vary. You can have them draw each sample and take notes or have them observe and look for the match to the evidence.
- If doing the “Around the World” variation, ask students if they think sands from different places are different and why. Have students thoroughly examine their initial samples as per the handout, then rotate around (or have them pass the slides) and note differences or likenesses. This can be extended to drawing each sample, if desired. Wrap up by using the globe or map to locate the origin of their samples.
- Other options:
 - Ask student at the beginning if they think that the sands will be different or the same. Have them explain their reasoning if developmentally appropriate. Some students, even as early as 1st grade, will be familiar with the idea of asking a question, posing a hypothesis, and collecting data. If appropriate, mold their ideas into questions and hypotheses. For example, “Are sands from around the world the same or different?” One hypothesis is, “Sands from around the world are the same.” Another could be, “Sands from beaches around the world are the same.” And so on. Wrap up by relating their “data” collected to their ideas and hypotheses.
 - Have them gather and share what they saw as well as describes their favorites.