



Main Street Science

A Collaboratorium for K-12 STEM Learning

RICE SORTING

Objective:

Students sort rice into 'like' piles macroscopically, then microscopically using a magnifying glass and a microscope. Students then describe their sorting schemas to each other.

NYS MST Standards:

Standard 1: Analysis, Inquiry, and Design (Elementary): The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.

Standard 4: Science, Physical Setting (Elementary): Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.

National Science Education Standards:

Science as Inquiry (K-4): Abilities necessary to do scientific inquiry; Understanding about scientific inquiry.

Physical Science (K-4): Properties of objects and materials.

Background:

Students have a difficult time moving from the macroscopic world into the microscopic world. This activity allows students to sort items using their macroscopic properties and then sort again using microscopic properties. This exploration encourages students to think about the properties of objects at a microscale. Skills in observation and sorting are practiced in this activity.

Materials:

- At least four varieties of rice
- White rice labeled with tiny yellow and brown dots (dots should only be visible under magnification)
- Tweezers
- Petri dishes for sorting the rice (one per student)
- Double stick tape
- Plastic microscope slides
- Magnifying glass
- Microscope (preferably dissecting scope with projection onto screen)

Check for prior learning:

Why do we sort things? What kinds of things at home do you sort?

Creating hands-on science learning activities to engage the mind

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New learning:

Teacher distributes bags of rice (at least 30 grains per bag of mixed varieties), one to each student.

Sort the rice into 'like' piles using tweezers. Discuss the various sorting schemas used by individual students.

Now, look closer with a magnifying glass. Are there any other ways to sort the rice?

Sort the rice again into 'like' piles. Encourage students to look for details about the rice that make individual grains similar or different. After students have finished sorting, they mount one grain of each type of rice onto a slide using double stick tape.

Students take turns putting their slides under the dissection scope. Discuss the various sorting schemas used by individual students, noting similarities or differences.

Optional: take still images of the students' sorting boxes and print them. Students can look for patterns in sorting by comparing the images.

Check for learning:

How many different ways did we find to sort the rice? What was different or similar about the rice when we looked closer with the magnifying glass and then the microscope? What other tiny things around us could we sort?

Extension:

Try the same activity using small beads of different types or other objects that look similar but up close are different.