Project FOCUS
Best Lessons
FIRST GRADE

Title of Lesson: **Powder Glove**
Theme: **Earth/Space Science**
Unit Number: **2** **Unit Title:** **Water, Water, Everywhere**
Performance Standard(s) Covered (enter code):

S1E2
S1CS1

Enduring Standards (objectives of activity):

Habits of Mind

- ☒ **Asks questions**
- ☐ **Uses numbers to quantify**
- ☐ **Works in a group**

- ☐ **Uses tools to measure and view**
- ☒ **Looks at how parts of things are needed**
- ☐ **Describes and compares using physical attributes**
- ☒ **Observes using senses**
- ☐ **Draws and describes observations**

Content (key terms and topics covered):
Water properties, density

Learning Activity (Description in Steps)

Abstract(limit 100 characters): An experiment where you can dip your hand in water witout getting it wet.

Details: 1. Fill the beaker or jar 3/4 full of water.

2. Use a shaker bottle or fine sieve to sprinkle a thin, even layer of powder over the surface of the water. The surface shuld appear evenly covered.

3. Push one finger straight down below the water surface, then pull it straight back up. Observe the dust on your finger, and the fact that your finer is dry. As you lower your finger, the layer of powder that forms the water-resisting "glove" is pulled away from the sides of the container and down into the water also. If you push down too far, or if the layer is not sufficiently wide, the upper part of your finger may get wet.

4. Repeat step 3, but this time insert your whole hand in the water. Before removing your hand, observe the "glove" in the water and notice the bubbles attached to your hand. Remove your hand from the water and note that it is still dry.

5. Use an eyedropper to place several drops of water on top of the lycopodium powder. Then gently move the container. Observe the drops of water as they roll across the surface of the lycopodium powder.

6. Add a few drops of liquid dishwashing detergent on top of the powder surface and repeat step 4. The protective glove will not form this time, and your hand will get wet (optional).

Lycopodium powder floats on the surface of the water because of the high surface tension of water. Lycopodium powder is hydrophobic--this means that there is not attraction between the powder molecules and the water molecule. For this reason, the lycopodium powder molecules tend to stay together, repelling the water and forming a glove around your hand in step 4. Adding detergent in step 6 lowers the surface tension of the water, allowing your hand to get wet.

Materials Needed (Type and Quantity):
Clear, wide-mouth container
Water
Lycopodium powder
Shaker bottle of fine sieve
Eyedropper
Liquid dishwashing detergent (optional)

Notes and Tips (suggested changes, alternative methods, cautions):
Alternative powders: talc (baby powder), cornstarch, or flour
It works best when you add the materials together in front of the class.
Lycopodium powder, as a dust, is very flammable. Be careful with it around open flames. Avoid inhaling the dust, as its effects on the respiratory tract are not known. Wash residues from this ativity down the drain or the lycopodium powder can be filtered and saved for reuse.

Sources/References:
1)
2)
3)