Science Outreach Lesson Plan

**States of Matter**

**\*\*\*Potential Messy Experiments. Put down newspaper!! Leave time for cleanup!!!!**

**Materials:**

* Corn Starch
* Food Coloring
* One larger bowl
* Plastic spoons
* Plastic Cups
* Wax Dixie Cup
* Sand
* Dowel
* Newspaper for easy cleanup
* ZipLoc Bags

**Discussion Questions:**

* Can anyone name any of the states of matter? (hint: think water, ice, and steam)
* Can anyone give any examples of the different states of matter?
* Can anyone name any differences between the states of matter?
* Try to stress that while we have 3 main categories of matter but some don’t fall into one category and some seem to be multiple at once.

**Procedure: Sand Demo**

* Place the Dixie cup on the table so that everyone can see
* Ask a volunteer to hold the dowel straight up in the cup as you pour sand in around it
* Fill the cup almost to the top
* Ask the volunteer to pull up on the dowel and watch as it comes out easily
* Repeat the set-up of the cup, sand, and dowel with a new volunteer
* This time, before removing the dowel, tap the cup on the table firmly several (5-6) times
* Now ask the volunteer to pull up on the dowel again and watch as the entire cup is lifted
* Ask for predictions of what will happen if water is mixed with the sand
* Repeat the experiment after mixing the sand with a small amount of water
* If time permits repeat the experiment one final time with corn starch instead of sand

**Follow-up Questions:**

* Does anyone have any idea what we changed between the two tests?
* Do you think other things would work as well as sand? Why does sand work so well?
* When else have you used the idea of sand compacting? (think the beach)

**Procedure: Oobleck**

* Demonstrate how to properly make oobleck in front of the group in the larger bowl
* Compare it to a bowl of water and demonstrate the different properties each substance has
* Put down newspaper for an easier cleanup!
* Distribute a ziptop bag filled with corn starch
* Drop a few (2-3) drops of the food coloring into each bag (let the kids choose the color)
* Have the volunteers walk around with water, adding it to each bag
* Allow the participants to mix in their own water until they think they have the right consistency
* Go around and ensure everyone is at least relatively close
* Let them play and experiment with their creations
* Group Clean Up

**Follow-up Questions:**

* What state of matter do you think the oobleck we just made is? Solid or liquid?
* Do you think it’s possible for something to be more than one state of matter at once?
* Can anyone name anything else that isn’t just one state of matter?