Polymer versus…

**Time: 20 min**

**Summary:** There are many types of materials we come across in everyday life.  We want to present a variety to the students and ask them to think about how they might be similar or different.  For example, stiff vs flexible? Dense vs airy? Stretchy vs rigid?  Some of the objects could be put in boxes to emphasize touch and feel to detect properties instead of immediately knowing what the material is.

ILOs:

1. Relate material properties to the function of everyday objects
2. Name an everyday object in a variety of material categories (wood, metal, paper, wood, plastic, etc.)
3. Determine properties unique to polymers

**Equipment list:**

* The printed off worksheet + writing utensils

(acquire as many as possible, ideally 5-6 of each object)

* Wooden item (ex pencil)
* Ceramic item (ex. mug or plate)
* Glass item (ex. Cup)
* *Hard plastic item (ex. water bottle, chapstick)*
* *Rubbery item (ex. Phone case, rubber band or eraser)*
* *Wrapper item (ex. Chip bag, plastic bag)*
* *Fabric item (ex. shirt)*
* *Paper item*
* *Jello*
* Metal item (ex. Metal utensil)

**Intro:**

Every object you use on a daily basis is made out of some material, where the material we choose to use depends on what properties we want the object to have. However, polymers have a super wide set of properties that allow us to use them for all sorts of different objects. For this activity we are going to have everyone touch and analyze a number of different common objects. Start by filling out what type of material you think the object is made from, and then go through the different comparisons listed and say which one you think each object is. Think about if there are any common descriptors between objects of the same material.

**Procedure:**

1. Lay out the different objects on some surface and hand out the work sheets
2. Have students go around and fill out the worksheet for all of the objects (give them 13 minutes)
3. Regroup and perform the debrief questions

**Discussion questions/debrief:**

Have students look through the lab hand out they have filled out, look for any characteristics common to polymers. However, have them note just how varied polymers are and how they fill many if not all of the different categories.

Q’s:

Pick two to three of the objects and go through the different options having the students raise their hand for which characteristic they voted for.

Which of the objects do you think were polymers? - Could bring up natural versus synthetic where paper is actually a natural polymer. (Then list all of the objects that were polymers)

Are there any properties that were common to the polymer materials? (Make sure to note the diversity in properties of the polymers)

**Lab handout needed?**

Yes