



## STEM Day Lesson Plan

**Title:** Unicorn Slime: The Chemistry of Polymers

**Subject Area:** Chemistry

**Learning Activity Description:** In this activity, students will explore the polymer chemistry behind the formation of 'slime' by combining chemical solutions of glue, borax, and water. Young chemists can experiment with their 'slime' and think about how this new substance is different from the two chemical solutions they began with.

**Lesson Activity Objective:** The objective for this activity is to investigate some of the interesting chemical properties of slime and to understand the cross-linking process between polymer chains that form the final slime product. Overall objective: To have fun with chemistry! 😊

**Lesson Activity Outcomes:**

- Students will have a basic understanding of chemistry and how chemical reactions occur to form products.
- Students will learn the definition of monomer and polymers.
- Students will learn how slime is an example of a polymer.

**Materials/Supplies Listed:**

- Clear glue
- Borax
- Water
- Measuring cups
- Eye dropper
- Stirring rod
- Food coloring (optional)

**Teacher Procedures:**

1. Make a saturated borax solution by adding 1 g of borax to 25 mL of water. Stir thoroughly until the borax has completely dissolved.
2. In a disposable plastic cup, add 50 mL of white glue and 50 mL of water. Stir thoroughly. (You may use more or less glue, as long as you maintain a 50:50 ratio between the glue and water.)
3. If desired, add a few drops of food coloring and stir thoroughly.

4. Using an eyedropper, add the borax solution a few drops at a time to the glue–water mixture and stir thoroughly with a stirring rod. The slime will collect on the stirring rod. Continue adding the borax solution until most of the glue–water mixture has turned into slime. Be careful not to add too much borax solution, or the slime will become too stiff. A good rule of thumb is to quit adding the borax solution when there is still a little glue–water mixture left in the bottom of the cup. This way, you will not add too much borax.
5. Remove the slime from the stirring rod with your fingers and work it with your hands until it is no longer sticky. The more you work it with your hands, the nicer its consistency. Store it in a Ziploc bag.
6. The excess borax solution can be poured down the drain and the cups disposed of in the trash.

**Preparation Time for Learning Activity:** 5-10 minutes

**Room set-up:** Lay out tablecloths if needed for easier cleanup.

**Group Strategies (example, group size, expected time for groups, etc.):** Each student will be able to make their own slime in approximately 20 minutes.

**Student Products/Artifacts/work pages:**

Thinking questions for the students during/after the experiment:

- What do chemists do?
- What tools do chemists use?
- What chemicals did you use to make slime?
- What happens when you mix the two liquid chemicals together?
- Does slime bounce?
- Can you stretch, roll or cut slime?

**Assessment Criteria/Rubric:** None.

**Closing/Transition to next activity:** In this experiment we learned that slime is an example of a polymer. A polymer is composed of very large chains of molecules that are composed of repeating units known as monomers. A single polymer molecule may comprise hundreds of thousands of monomers. Think about the different natural polymers in chemistry such as starch, DNA, and some proteins and how they relate to the slime we created in the experiment.