Topic: Slime Lab

Summary: Students will design their own experiment making slime. They are given a certain amount of materials to make the slime but no procedures or concentrations of materials. This lab works great for discovery.

Goals & Objectives: Students will be able to design their own experiment to make slime. Students will be able to use the scientific method to test their hypothesis. Students will be able to create a pie chart of their results.

Standards: CA Biology *Experimentation l.* Analyze situations and solve problems that require combining and applying concepts from more than one area of science.

Time Length: 100 minutes

Materials:

- Meter Stick, 1 per group
- Stirring rods1 per group (wooden sticks or fingers work good)
- 11 beakers, 10 medium size, and one 500mL.
- Paper or plastic cups, 1 per group
- Graduated Cylinders, 1 per group and one per beaker
- Glue (Elmers works good--*large container can be bought from home depot*)
- Water
- Food coloring
- Borax detergent

Lab Setup:
First make the borax solution. Mix 1 gram of borax in 500 mL of water. Then pour the solution into 5 beakers of 200 mL for easy access by the students. Second, pour the glue from the large container into cups for each lab group. 100 mL is plenty. Third, pour water into 5 beakers of 200 mL. Place the food-coloring bottle near the borax solution.

Place two cups at each lab station: one cup with glue and one empty cup. Place one large graduated cylinder at each station. Place the borax solution and the water on a desk in an easily accessible, high-traffic area of the room. Try to keep all solution near the sink. This helps with clean up. Place a graduated cylinder next to each beaker.

Procedures:
1. Group students as lab partners. Tell students to do all measuring on top of the tables. Students may not carry the graduated cylinders or beakers around the room. Students perform all work on top of tables or counters. If students get materials on the floor, they must clean it up immediately.

2. Students conduct the lab by measuring the glue, borax solution and water solutions with graduated cylinders. Students need to fill in their handout with their measurements. Each drop of food coloring counts as a milliliter. Students then stir their mixture. Discourage students from using their hands for stirring.

3. Students probably will not have a good mixture or stretchable slime. They can get more materials to add to their current mixture, but they may not start over. They fill in their new additions of mL in Attempt 2 and Attempt 3.

4. 30 minutes before the end of the period, stop allowing the addition of materials. This is when students will use the stir rod to stretch their slime vertically, using a meter stick to measure the distance. Students record the length into the first row of the data table. Wait for all students to finish measuring.

5. Students then share their team name and lengths, and display their slime. Students then infer if the slime is solid, liquid or somewhere in-between and infer the viscosity of the slime. High viscosity pours very slowly.

6. The team with the longest stretching slime shares their mL of materials used to make the slime. Students then write in their conclusion. The "go further" can be finished in class or as homework. Clean up the lab. Adding dry borax will make the slime solid and may possibly bounce.

Clean Up:
All students must clean up their tables and the counters. Students clean the graduated cylinders by filling them up with water then going to the trash barrel with soap and test tube brush. Students have to throw away their cups of slime. Do not let students take home their slime because you will find it around campus. Keep the trash barrel in front of the room, next to you, so that students do not reach in and take the slime. This can be very messy if not controlled.

Accommodations: Students with an IEP can take the handout home if they need extra time, not fill in the data table with other students' values, and not go beyond the conclusion.

Evaluation:
The problem statement, hypothesis, and ingredients are not worth points. Questions 1 – 18 are worth 2 points each, for a total of 36 points. A complete data table is worth 2 points. The pie chart is worth 2 points: the labels and correct values are 1 point each. This assignment is worth a total of 40 points.

Name: _____ Row: _____

Date:_____ Period:_____

Slime Lab

You are going to attempt to make slime. All you have are the materials needed to make it. You have to determine the correct order to add the materials and the percent composition (how much) of each material. Your group is in competition with the other lab groups to see if they can make the most stretchable slime. Each lab group will come up with their own team name for the competition.

Team Name: _____

Problem Statement:

_____

Hypothesis:

_____

Ingredients:

_____ _____

_____ _____

Procedures: Attempt 1

1. _____ mL of glue poured into your cup.
2. _____ mL of water poured into your cup.
3. _____ mL of Borax solution poured into your cup.
4. _____ drops of foods coloring poured into your cup. Each drop will count as one mL.
5. _____ number of minutes you stirred your mixture.

_____

Attempt 2

You added to your mixture _____

_____

Attempt 3

You added to your mixture _____

_____

6. Add up all the mL of glue added to your mixture: _____
7. Add up all the mL of water added to your mixture: _____
8. Add up all the mL of borax solution added to your mixture: _____
9. Add up all the mL of food coloring added to your mixture: _____

10. Total mL in your mixture: _____

11. What is the % composition of materials for your mixture?

_____ % of glue, _____ % of water, _____ % of borax, _____ % of coloring

Experimental Data:

	Qualitative Data		Quantitative Data
Team Name	**State** solid, in-between, liquid	**Viscosity** high, medium, low	Stretch Length cm
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
13. _____	_____	_____	_____
14. _____	_____	_____	_____
15. _____	_____	_____	_____

Analysis:

12. Which team's slime could be stretched the longest? _____

mL of glue used: _____ mL of water used _____

mL of borax used: _____ mL of color used _____

13. Total mL in the longest stretching mixture: _____

14. What % composition of materials did the longest stretching team have?

_____ % of glue, _____ % of water, _____ % of borax, _____ % of coloring

15. Conclusion:

_____

Go Further:

16. Which team's slime had the highest viscosity? _____

17. Guess what % composition of materials would create the highest viscosity?

_____ % of glue, _____ % of water, _____ % of borax, _____ % of coloring

18. What ingredient caused their slime to have the highest viscosity _____

_____

Graphing: Create a pie chart of percentages used in question fourteen. Please label.