Bubbles
4th or 5th Grade
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<u>Benchmark</u>:
SLC 6: A.) Students will design and conduct experiments using scientific methods and will discuss the "fairness and validity" of the experiments. B.) Students will identify constants and variables within experiments and demonstrate ability to limit variables.

<u>Objectives</u>:
To experiment with three different bubble solutions and find the solution that makes the largest bubble.

<u>Materials</u>:
- Bubble solution (regular mixture)
- Laundry detergent and water mixture
- Dish soap, glycerin, and water mixture
- Small cups
- Vinegar (for cleaning the soap off of the desks)
- Straws for blowing bubbles
- Rulers

<u>Initial Demonstration</u>:
Show the students the three different mixtures and explain what is in each one. Ask them which one they think will make the largest bubbles based on their past experiences. Have them write this down as their hypothesis.

<u>Target Model</u>:
-*[such and such] solution will create the biggest bubbles because I remember seeing it make big bubbles.*

<u>Procedure</u>:
Give the students a small cup filled with regular bubble solution and a straw. Students need to pour a small amount of the solution out onto their desk and spread it around so a large area is covered. Next the students should place one end of their straw into the bubble solution and then place their finger over the other end of the straw. Take the straw out of the solution and place on the table. Remove finger and blow gently into the straw. The students will blow five bubbles with the solution and measure the diameter of each bubble they blow regardless of its size. All five measurements are recorded on the bubble worksheet under Solution 1.

Repeat with the other two solutions.

As a class have them look at their data and figure out which one made the largest bubbles. This may be a good time to incorporate math by finding each solution's average bubble size and then comparing those three numbers. Talk about why the winning solution worked better than the other two.

Target Revised Model:

-*[such and such] solution makes the biggest bubbles because the average size of the bubbles made with it in the class was larger than the other solutions used.*