



Bubbles:

September 9 Introduction to Bubbles

Background Information: Bubbles are amazing pockets of air wrapped in a thin layer of soap and water. When you blow into a bubble wand, the soap film traps the air you blow, creating a round, shiny bubble. The science behind bubbles is all about surface tension, which is like a stretchy skin that forms on the surface of liquids. Soap makes the water's surface tension weaker, allowing it to stretch into a thin film that can hold the air inside. That's why bubbles are so fun to make and pop! They come in all sorts of shapes and sizes, but they are always round because a sphere shape uses the least amount of surface tension to hold in the air.

Children will learn the basic science behind bubbles, why they hold air, and how to make a basic bubble solution.

What you will need:

- Water
- Dish soap (preferably Dawn)
- Glycerin or corn syrup
- Measuring cups
- Mixing bowl
- Spoons
- Small plastic containers for each youth

Bubble Solution Recipe:

1 cup of water

2 tablespoons of dish soap

1 tablespoon of glycerin or corn syrup

What you will do:

1. Introduction to Bubbles:
 - a. Explain that bubbles are pockets of air surrounded by a thin film of soap and water.
 - b. Discuss how the soap film traps air inside, creating a bubble. The film consists of two layers of soap molecules with a layer of water in between.
2. Making the Bubble Solution:
 - a. Measure 1 cup of water and pour it into the mixing bowl.
 - b. Add 2 tablespoons of dish soap to the water.



- c. Add 1 tablespoon of glycerin or corn syrup to the mixture. This helps make the bubbles stronger and last longer.
 - d. Stir the mixture gently to avoid creating foam.
3. Distributing the Solution:
 - a. Pour the bubble solution into small containers for each youth.
4. Bubble Activity:
 - a. Give youth straws or bubble wands to dip into the solution and blow bubbles.
 - b. Encourage youth to observe the bubbles' shape, size, and how long they last.

Debriefing:

- What did you notice about the shape of the bubbles?
- Why do you think some bubbles lasted longer than others?
- How do you think adding more soap or glycerin would affect the bubbles?



September 16 Exploring Bubble Shapes and Sizes

Objective:

Youth will experiment with creating bubbles of different shapes and sizes and learn why bubbles are typically spherical.

What you will need:

- Bubble solution from Lesson Plan 1
- Different shaped bubble wands (e.g., circles, squares, triangles)
- Pipe cleaners to create custom-shaped wands
- Straws
- Scissors
- Small bowls

What you will do:

1. Review Bubble Basics:
 - a. Briefly review what youth learned about bubbles and why they hold air.
2. Creating Custom Bubble Wands:
 - a. Provide youth with pipe cleaners and show them how to shape them into different geometric shapes (e.g., circles, squares, triangles).
 - b. Allow youth to create their own custom wands.
3. Experimenting with Shapes:
 - a. Pour the bubble solution into small bowls.
 - b. Have youth dip their shaped wands into the solution and blow bubbles.
 - c. Observe and discuss the bubbles' shapes and sizes.
4. Explaining Bubble Shapes:
 - a. Explain that while bubble wands can be different shapes, bubbles themselves are always spherical because a sphere is the shape that minimizes surface tension.

Debriefing

- What different shapes did you try to make bubbles with?
- Did any bubbles come out in the same shape as your wand? Why or why not?
- What did you learn about the shape of bubbles?



September 23 Creating Giant Bubbles

Objective:

Youth will learn techniques to create large bubbles and understand the factors that affect bubble size.

What you will need

1. Bubble solution from Lesson Plan 1 (consider doubling the recipe for more solution)
2. Large bubble wands (can be made from wire hangers or purchased)
3. Hula hoops
4. Small kiddie pool or large plastic container
5. String

Straws

What you will do:

1. Review and Expand:
 - a. Review the basics of bubbles, including their composition and why they are spherical.
 - b. Discuss how larger bubbles can be made by using larger wands and more bubble solution.
2. Making Large Bubble Wands:
 - a. Show youth how to make large bubble wands using wire hangers or by tying string between two straws.
 - b. If using string, ensure it forms a loop.
3. Preparing for Giant Bubbles:
 - a. Fill a small kiddie pool or large plastic container with bubble solution.
 - b. Demonstrate how to dip the large wands or hula hoops into the solution.
4. Creating Giant Bubbles:
 - a. Have youth dip their wands into the solution and gently wave them to create giant bubbles.
 - b. Encourage youth to experiment with different techniques to make larger bubbles.

Debriefing

1. What techniques worked best for making giant bubbles?
2. How did the size of the wand affect the size of the bubble?
3. What did you find most challenging about creating large bubbles?



September 30: Bubble Art and Science

Objective:

Youth will explore the science of bubbles through art by creating bubble prints. They will learn how different variables affect bubble formation and use bubbles to create colorful artwork.

What you will need:

- Bubble solution from Lesson Plan 1
- Food coloring (various colors)
- Small bowls or cups
- Straws
- White construction paper or cardstock
- Measuring spoons
- Protective table covering (e.g., plastic tablecloth)
- Aprons or old shirts to protect clothing

What you will do:

1. Introduction to Bubble Art:
 - a. Explain that bubbles can be used to create beautiful and unique art pieces.
 - b. Discuss how adding food coloring to the bubble solution can create colorful bubbles that can be transferred to paper.
2. Preparing the Colored Bubble Solution:
 - a. Pour small amounts of bubble solution into several bowls or cups.
 - b. Add a few drops of different food coloring to each bowl and stir gently to mix.
 - c. Set up a protected workspace with the table covering and have youth wear aprons or old shirts.
3. Creating Bubble Prints:
 - a. Give each youth a straw and a piece of white construction paper or cardstock.
 - b. Instruct youth to dip the straw into the colored bubble solution and blow gently to create bubbles in the bowl.
 - c. Once the bubbles are overflowing from the bowl, have youth gently press their paper onto the bubbles, capturing the colorful prints.
4. Experimenting with Variables:



- a. Encourage youth to experiment with blowing different sizes of bubbles and using different colors on the same piece of paper.
 - b. Discuss how the size of the bubbles and the amount of color affect the final artwork.
5. Drying and Displaying Artwork:
 - a. Allow the bubble prints to dry completely.
 - b. Once dry, display the artwork around the classroom or create a gallery wall.

Debriefing:

1. How did the different colors mix and appear on your bubble prints?
2. What happened when you blew larger or smaller bubbles?
3. What did you enjoy most about making bubble art?