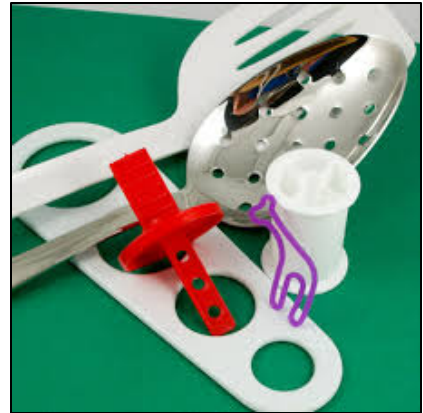


# Physical Science: Bubbles

## Activity Overview

Children **experiment** to learn what kinds of bubbles can be made using everyday objects. They **observe** and **describe** the shapes, sizes and behavior of bubbles. As children become successful bubble blowers, they **predict**, **compare**, **ask questions**, **communicate**, and **learn about cause and effect**.

\*Science process skills are in bold.



## Underlying Science Concepts:

- Bubbles are filled with gases.
- Bubbles are round (sphere-shaped), no matter the shape of the bubble blower. However, when bubbles are touching each other or a surface, they have flat edges.

## Materials:

- Dish Soap (Dawn® dish soap recommended.)
- Water (Tap water is okay, but distilled water makes the best solution.)
- Containers for bubble solution (pie pans or dish tubs work well)
- Objects to use for bubble blowers such as: strawberry baskets, slotted spoons and spatulas, cookie cutters, CDs, plastic tubes, large rubber bands, spools, funnels, strainers, and juice cans with the ends removed.
- Towels for cleanup

## Getting Ready:

- Prepare enough bubble solution. For each gallon of bubble solution mix together: 1-cup dish washing liquid and 1 gallon of water. Optional: add in 1/8 cup of glycerin or corn syrup for more elastic bubbles. Bubble solution keeps well and can be prepared days or weeks ahead of time. Store in a closed container to avoid evaporation.
- Collect the bubble blower objects.
- Fill dish tubs or other containers with enough bubble solution for dipping the objects.
- It is a good idea to cover the tables and/or floor area under the tubs of bubble solution with newspapers or sheets.

## → Engage

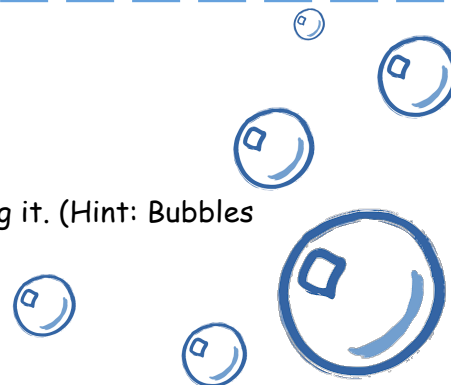
- Gather the children in an area away from the materials. Ask, "Have you ever made bubbles?" "What things did you use to make bubbles?"
- Show the children a container of bubble solution. You may want to explain how you mixed water with dish soap to make the solution.
- Show the children the materials to experiment with and ask them if they think these objects can be used to make bubbles and what kinds of bubbles they might make.
- Give the children some tips for successful bubble blowing and go over safety rules:
  - Demonstrate dipping one of the objects into bubble solution. You may want to model what happens if you blow too hard and let the children tell you what you should try next time (blow gently). Emphasize that if it doesn't work the first time just try again.
  - Say, "My hands are all soapy, what should I do?" (They'll probably say to wash them.) I'm just going to wipe them on my pants. That's what you will get to do today because it's just soap and water. Now you don't have to add soap to your laundry!
  - Remind the children not to put the bubble blowers in their mouths. Tell them that if they do accidentally get a little bubble solution in their mouths, it will taste awful, but it won't hurt them. If it does happen, they can rinse their mouth out with water.
  - If you get bubble solution in your eye, don't rub with your hands. Just blink and blink and your tears will wash it out. If it still stings, a teacher will help you.
  - Remind children to walk, not run. Bubble solution is very slippery.
  - Only pop your own bubbles. Leave other people's bubbles alone unless you ask first.

You could have the children make the bubble solution themselves as a separate activity.

## → Explore

- Encourage children to make predictions, test the different objects, and observe what happens.
- Ideas for things to try:
  - Blow bubbles using air from their bodies.
  - Wave objects in the air to make bubbles.
  - Use their own hands as bubble blowers.
  - Look for all of the different ways one object could be used to make bubbles.
  - Try to make big bubbles, try to make tiny bubbles.
  - Try to catch bubbles on their hands.
  - Try to catch a bubble or poke a finger in a bubble without popping it. (Hint: Bubbles like wet things.)

When talking about the round shape of bubbles, you can teach them the word "sphere."



## → Reflect

- Encourage the children to share about their experiences using the different bubble blowers. *What did you discover about making bubbles? Which were your favorite bubble blowers? Why?*
- Show some of the bubble blowers. Ask, what is the same about all of the bubble blowers? The children will likely notice that they all have a hole(s). Ask for other ideas of things that could be used to make bubble blowers.
- Ask, "What did you put inside your bubbles?" To help children conceptualize that bubbles are filled with air, have them place their hand in front of their mouth and pretend to blow a bubble. This allows them to feel air, even though they cannot see it. Another way they can feel air is by using their hands to fan themselves.
- Ask, "What happens when a bubble pops?" (The air escapes and mixes with the rest of the air in the room.)

## Ideas for Further Explorations

- Go for a scavenger hunt around the classroom to find objects that would make good bubble blowers and test them.
- Invite the children to bring an object from home, which they think will work to make bubbles. Before testing the objects, let each child show what they brought and make predictions about what kind of bubbles it might make.
- Provide materials for children to invent their own bubble blowers. Suggested materials: straws, pipe cleaners, recyclables, paper tubes, yarn, cups, scissors, rubber bands, tape.
- Create bubble blowers for making foamy "bubble snakes." Place a baby wipe over the end of a cardboard tube, or a water bottle with the bottom cut off. Secure with a rubber band. Dip into bubble solution and blow through the tube.
- Use eggbeaters in bubble solution to create bubble foam.
- Make table bubbles! Wet the table or tray you are using with some bubble solution. Dip your straw into bubble solution, and then hold it close to the table/tray at an angle. Try to blow a bubble on the table. Note: To prevent children from accidentally sucking in bubble solution, you can punch a hole near the top of the straw, as seen in the picture to the right.

### Key Vocabulary

During the activities integrate the words below into your conversations. Children's vocabulary will build with practice.

- Bubble
- Shape
- Observe
- Round
- Experiment
- Sphere
- Slippery
- Foam

### Guiding Questions

- How can you make big bubbles?
- How can you make tiny bubbles?
- What happens if you blow hard? If you blow softly?
- What shape are bubbles? Can you blow a bubble a different shape?
- What colors do you see on the bubbles?
- How can you hold a bubble in your hand?

## Math Connection

Size and shape are big ideas in math that are embedded in bubble explorations. Size is an attribute of bubbles that children can talk about. Help children build their mathematical vocabulary by making comparisons and using words such as big, bigger, biggest, small, smaller, smallest, and tiny.

A sphere shape is defined as a three-dimensional perfectly round object. Children can think of other sphere-shaped objects like oranges, beach balls, etc.

## Song and Movement:

### "I'm a Little Bubble"

Tune: "I'm a Little Teapot"

I'm a little bubble, shiny and round.  
I gently float, all around.  
The wind lifts me up but then I drop.  
Down to the ground, where I pop.

## Teacher Tips

This activity can be done outside on a day with good weather. The advantages of being outside are easier cleanup and more space for bubbles to fly higher and move in the wind.

However, bubble explorations can be easily managed inside by locating the activity near a sink and in an area that is easy to clean. Spread newspaper or sheets beneath the exploration area to absorb any spills. If using newspaper, have plenty on hand and remove crumpled newspaper as needed.

**Clean Up:** A solution of half vinegar, half water is best for cleaning tables. It cuts the soap scum and leaves tables sparkling clean. A squeegee is also useful for removing bubble solution from tabletops. The vinegar solution can also be used on the floor area if slippery. In general, sponges just spread the soap solution around and make it harder to clean up the bubble solution.

If you are concerned about using bubble solution with infants and toddlers, baby shampoo can be used instead of dish soap. However, the solution will not be as strong.

## Background Information for Teachers

A bubble is a thick skin of liquid surrounding a gas. This thin skin, or in the case of soap bubbles, this **soap film**, has elastic qualities; it can stretch. The soap film is composed of molecules of water and soap. In the case of soap bubbles, the gas that the soap film surrounds is composed either of the gases that we exhale (carbon dioxide and other gases) or the gases that make up the air in the classroom (as when a bubble is made by waving a bubble wand in the air).