Activity 4
Bubble Technology

Overview
Technology involves the use of science to create something practical. In this activity, your students experiment to discover what objects can be used to blow bubbles, which make little bubbles, and which make big bubbles. By gathering this information, they are doing a kind of technical research. You may want to give them a chance after the Bubble Festival to use their research to design and draw specialized bubble blowers.

What You Need for One Station
✓ 2 dish pans

✓ At least 15 pieces of “junk” to use for bubble-makers, such as: strainers, small tin cans, protractors, paper, mason jar lids, string, drinking straws, tea ball, rubber stoppers with holes, flower pots, funnels, strawberry baskets, plastic rings from a six-pack, medicine droppers, a length of rope, paper cups, styrofoam cups, various mesh sizes of screen, different size washers, rubber bands, toilet paper, paper towel rolls, aluminum foil, wire of different gauges, and springs.

Note: You may want to avoid items such as tubing (students tend to put their mouths on it) and turkey basters (squirt fights anyone?). Unfortunately, these items are really neat bubble-makers. Be advised that some metal items will rust. If you choose to use metal items that are not enameled or made of stainless steel, make sure they are rinsed and dried after use.

✓ Although most of the materials you choose should be potentially successful bubble-makers, it is important to include some that won’t work (e.g., cups or spoons). Part of the activity involves categorizing objects according to whether or not they make bubbles.

Getting Ready
✓ Fill the dish pans about half-full with bubble solution, enough so objects can be completely dipped.

✓ Put the “junk” out on the station.
Special Considerations

- Foamy soap solution makes it harder to make bubbles. You may want to ask your students not to jiggle the objects in the bubble solution—too much jiggling makes foam. Skim the foam off the surface of the bubble solution periodically.

- Remind your students to leave the items on the table, not in the solution. Some teachers put the items on a tray, and ask the students to put them back on the tray when they are done.

- There are two methods for making a bubble with the various objects: blowing through the object or waving it in the air. Waving is the messier of the two methods as bubble solution flies off the item when it is waved. Teachers who want to limit the mess as much as possible could ask their students not to wave, or have a special waving area on a drop cloth.
Going Further

Ask your students to choose one object in the classroom, or bring an object from home, which will work to make bubbles. Ask them to predict whether it will make big bubbles or small bubbles. Allow each student to test his object, one at a time, in front of the class. Have the rest of the students predict whether they think it will work, and if it didn’t, analyze why not.

Have students create drawings of bubble-makers for specialized uses, such as a bubble-maker that makes foam, one that doesn’t need to be dipped into soap solution, one that makes large, detachable bubbles, or one that makes five bubbles at a time.

Have your students combine materials to make more complicated bubble-blowing contraptions and machines.

Ask your students to imagine that they are stranded on a strange planet and they must create a machine to make a bubble that is big enough to float away on. Have them draw and write about their machines.

Use this station as a starting point for a unit on inventions.

Provide your students with other engineering challenges. Have them create an egg-cracking machine, an automatic ice cream scoop, a jelly bean factory, or a machine of their choice. Explain that technology involves the use of science to create something practical. Ask students to identify experiments that would give them information important to the design of their machine. (For example, how hard you need to hit an eggshell to crack it, or how long jelly beans take to dry.)
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What to Do

Choose a tool.
Try to make a bubble with it.

Decide whether it makes a big bubble, a small bubble, or no bubble at all.
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Questions

What's the same about all the tools that make bubbles?

Can you turn a non-bubble blower into a bubble blower?

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Activity Task Card for Volunteers

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Your goal is to assist the students in making their own discoveries, while keeping the activity safe, and the mess under control. Read the signs at the station so you know what the students will be investigating. If the students are non-readers, you will have to communicate the content of each sign. This is best done by giving a challenge or asking a question, rather than demonstrating how it is done. Save your demonstrations for situations when students aren’t successful on their own, even with coaching.

Ask the students open-ended questions, such as: What have you discovered? Why do you think that is happening? You may also want to provide further challenges, such as: Can you use that object in a different way to make bubbles?

Resist the temptation to give explanations to the students.

If students get out of control, involved in creating mountains of foam or some other activity that is unrelated to the station, you might want to steer them back on task. Make sure to intervene if you see an unsafe behavior. However, keep in mind that what may appear as fooling around with bubbles can lead to some of the deepest learning experiences. Some of the greatest scientific discoveries have been made while scientists “fooled around”—the same is true of great personal discoveries.

Tips for Managing the Station

- Discourage students from putting their mouths directly on the objects. Blowing through the object from a distance of several inches or waving the object through the air works more effectively.

- Foamy soap solution interferes with this activity. Skim the foam off the surface of the bubble solution periodically. You may want to ask your students not to jiggle their objects in the bubble solutions as too much of this is what makes the foam.

- Refill tubs of bubble solution as needed. There should be enough bubble solution in the tub to completely cover the bubble-making objects.

- Keep the objects on the table, not in the solution. This will make them easier to find, and the tubs clearer for complete dipping.

- Use a squeegee to periodically remove excess bubble solution from the table. Throw sections of newspaper over spills on the floor.