

## Big Science Little Hands II: Community Connections

Together, the Nanaimo Science and Sustainability Society (NS3) and Science World BC worked with Early Childhood Educators to complement the original *Big Science for Little Hands* activity book, with additional hands-on science resource materials. Our goal is to make science fun, hands-on, accessible to educators and to provide examples on how to link science concepts to the local community. We hope that these resource materials complement what you are already doing and offer additional ideas for making local connections.

The activities described in this book were designed with the help of nine Early Childhood Educators on Vancouver Island. Activities were tested at 54 pilot programs with 484 young children.

Support for program development was provided by the Vancouver Foundation, Woodgrove Chrysler, Nanaimo Insurance Brokers and VMAC.

Special thanks to Lorna McCrae, Barb Mjolsness, Jen Borzel, Sheila Grieve, Shawna Hassard, Odette Herr, Chris Peters, Melissa Burke, Corinne Dunn, Carly Foster, Becky Manson and the staff at Ladysmith Friends and Family, for allowing the NS3 to test 54 pilot programs at their early childhood education centres and gather student feedback! Their participation was invaluable!

*For more ideas and activities check out [scienceworld.ca/bslh](http://scienceworld.ca/bslh)*

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**Introductions**—Introduction activities are low-preparation, low-mess activities that can set the stage for the topic to be explored and work well for large groups.

**Explorations**—Explorations are an opportunity to discover, explore and get little hands dirty. Explorations involve open-ended activities that are appropriate for smaller groups and have questions associated with them for enhanced learning.

**Make This**—Children take their experiences home for further exploration, with this make-and-take activity.

**Community Connections**—Connect your explorations to the environment around you! Community Connections provide guides on how to connect these activities to the world around you.

**All Together**—This group activity makes a great wrap up to your topic of exploration.

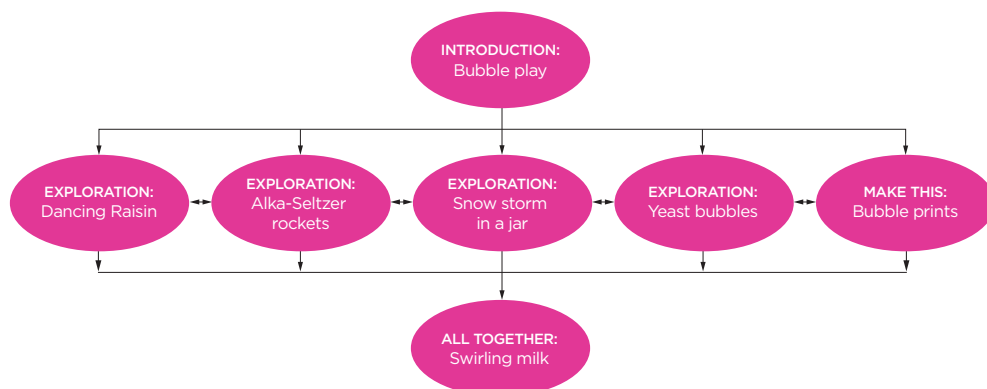
# Bubble & Fizz



## A path through Bubble & Fizz

Here's one possible way to put the activities in this resource together:

- Do an *Introduction* at circle time in a large group.
- Have the children try out the *Explorations* and *Make This* in smaller groups at stations around the room.
- Try *All Together* just before the end of the school day, or at the end of a few days on the topic.



*Big Science for Little Hands* supports the learning goals outlined in the British Columbia Early Learning Framework, particularly those in the area of Exploration and Creativity.

To promote exploration and creativity, adults provide an environment where young children can do the following:

- Explore the world using their bodies and all their senses
- Build, create and design using different materials and techniques
- Actively explore, think and reason
- Identify and try possible solutions to problems in meaningful contexts and situations
- Be creative and expressive in various ways
- Develop a sense of wonder for natural environments
- Express a zest for living and learning

(BC Early Learning Framework: [bced.gov.bc.ca/early\\_learning/](https://bced.gov.bc.ca/early_learning/))

## Share with us!

Help us to improve Big Science for Little Hands by submitting feedback:  
[scienceworld.ca/bslh/feedback](https://scienceworld.ca/bslh/feedback)

# Bubble & Fizz

## Introduction



## Bubble Play

Explore different ways to make bubbles and discover what makes them pop.

### What you need

- Bubble solution (1L)
  - 500ml water
  - 500ml Johnson's® baby shampoo
  - 5–15ml glycerine (optional, helps bubbles last longer)
- Pipe cleaners
- Funnels
- Shallow dishpans
- Drinking straws/trays
- Small waterproof toys (plastic animals, people, vehicles)
- Drinking straws and string (for extension activity)

### Preparation

1. Make bubble solution by gently mixing ingredients together.
2. Let the bubble solution sit for at least two hours. Leaving the solution overnight results in even better bubbles.
3. Pour bubble solution into trays or dishpans.

### Where to next?

#### INTRODUCTION

##### Bubble Play

#### EXPLORATION

Dancing Raisin  
Alka-Seltzer Rockets  
Snow Storm in a Jar  
Yeast Bubbles

#### MAKE THIS

Bubble Prints

#### ALL TOGETHER

Swirling Milk

#### MORE IDEAS

### Notes

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# Bubble & Fizz

## Introduction



### Hands on

1. Blow through the drinking straws to create lots of bubbles.
2. Blow through the narrow part of a funnel to create large bubbles.
3. Bend pipe cleaners into different shapes and use them as bubble wands to make bubbles.

### Questions to ask

1. What is a bubble?
2. What is inside a bubble?
3. How do you make bubbles of different sizes?
4. What makes one bubble or many bubbles?
5. What makes a bubble pop?

**HINT:** Water is a key ingredient in bubbles. Soft water is good for bubbles. Hard water (any water containing high levels of iron, including well water) is bad for bubbles. If you are having difficulties making bubbles with hard water, use distilled water instead.

### What's next?

Blow a bubble around a toy:

- Blow through a drinking straw to create a standing bubble.
- Select a small plastic toy, submerge in bubble solution so it is completely coated.
- Try to push the soapy toy into the centre of the bubble. Can you do it without popping the bubble?
- Does the shape of the toy matter? Can it be done without coating the toy first?

Make bigger bubbles with a straws-and-string device:

- Thread about a metre of string through two drinking straws and tie the ends of the string together.
- Hold one drinking straw in each hand and open the string into a rectangle.
- Dip the device into a pan of bubble solution with your hands close together.
- As you lift your hands out of the solution, open the rectangle and scoop air into it to form a bubble.

Try placing a child in a giant bubble. ([scienceworld.ca/resources/activities/body-bubble](http://scienceworld.ca/resources/activities/body-bubble)).

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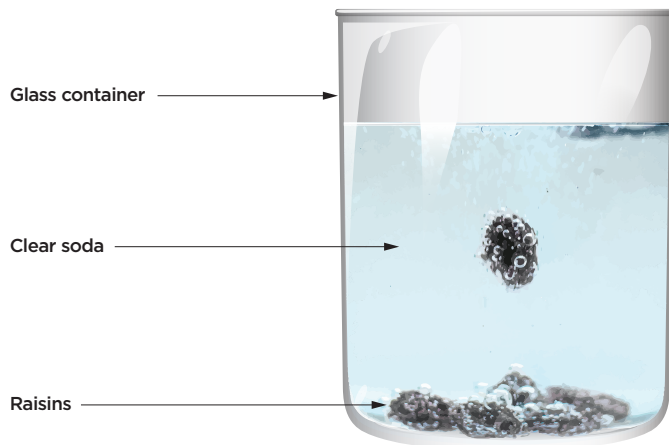
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# Bubble & Fizz

## Exploration



## Dancing Raisin

Watch as a raisin sinks, because it is denser (or heavier) than the soda, but then floats as bubbles in the soda stick to the bumpy raisin making it more buoyant. When the bubbles pop, the raisin sinks again and the cycle repeats!

### What you need

- Transparent or clear soda
- Raisins
- Tall, clear glass or plastic cup

### Hands on

1. Pour soda into the glass. Look at the bubbles.
2. Place several raisins in the glass. Observe the raisins.

### Questions to ask

1. What do you think will happen when you put a raisin in the soda? Why?
2. Does the raisin sink or float when you put it into the glass initially? How about after a few minutes?
3. What makes the raisin sink?
4. What makes the raisin float?
5. What is special about soda? Do you think the raisins would dance in water?
6. Count how many times a raisin goes up and down in 1 minute.

### Where to next?

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Bubble Play

#### EXPLORATION

##### Dancing Raisin

Alka-Seltzer Rockets  
Snow Storm in a Jar  
Yeast Bubbles

#### MAKE THIS

Bubble Prints

#### ALL TOGETHER

Swirling Milk

#### MORE IDEAS

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# Bubble & Fizz

## Exploration



## Alka-Seltzer Rockets

Watch as gas forms in a small container that leads to an explosion!

### What you need

- Alka-Seltzer tablets
- Clear, small container with a tight fitting lid (film canisters work well if you can find them)
- Food colouring
- Water
- Spoon

### Hands on

1. Practice closing the lid onto the container quickly and securely.
2. Take approximately a third of an Alka-Seltzer tablet and crush it up in to a fine powder in the lid of your container.
3. Add a drop of your favourite food colouring (optional) to your small container and then fill halfway with water.
4. Quickly put the lid (with tablet powder) on the container. Make sure it is sealed tightly. Give a quick shake, step back and wait for the explosion!

**HINT:** Set this up outside or somewhere that a mess won't be an issue.

### Where to next?

#### INTRODUCTION

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Dancing Raisin

**Alka-Seltzer Rockets**

Snow Storm in a Jar

Yeast Bubbles

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# Bubble & Fizz

## Exploration



## Snow Storm in a Jar

Make a miniature snow storm in a jar. Water is heavier than oil and sinks to the bottom of the mixture. When Alka-Seltzer dissolves in water, it makes bubbles which rise up through the water and then through the oil, dragging some white water and glitter along for the ride. When the bubbles reach the surface and pop, the water and glitter sink back down through the oil like falling snowflakes.

### What you need

- Clear jar
- Mineral oil (baby oil) or very pale-coloured vegetable oil
- White paint
- Warm water
- Iridescent glitter
- Alka-Seltzer

### Preparation

1. Fill the jar  $\frac{3}{4}$  of the way with baby oil.
2. In a bowl, mix together very warm water and white paint to make white water.
3. Break an Alka-Seltzer tablet into pieces.

### Where to next?

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Alka-Seltzer Rockets

**Snow Storm in a Jar**

Yeast Bubbles

#### MAKE THIS

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# Bubble & Fizz

## Exploration



## Yeast Bubbles

Watch as yeast, a common micro-organism used in the kitchen, expels carbon dioxide bubbles.

### What you need

- Dry yeast (one package, or one tablespoon of bulk yeast)
- One cup of warm water
- 5ml sugar
- Small bowl
- Spoon

### Hands on

1. Take a few granules of yeast.
2. Describe what they look and smell like.
3. Place the granules in a small bowl.
4. Add the warm water to the bowl.
5. Add the sugar to the bowl.
6. Observe immediately.
7. Observe after 5 minutes.

### Where to next?

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**Yeast Bubbles**

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# Bubble & Fizz

## Exploration



### Questions to ask

1. What is changing in the bowl?
2. Did the mixture expand/get bigger/move closer to the top of the bowl?
3. Why do you think yeast is used in baking?
4. Is yeast alive? How does yeast make bubbles?

### What's next?

- What would have happened if we added something other than sugar to the yeast? Try using spices, salt or sugar alternatives.
- Try making bread with the activity Pizza Dough/Bread from “Size Matters” from *Big Science for Little Hands* ([scienceworld.ca/bslh](http://scienceworld.ca/bslh)).
- Alternatively, make your own pretzels:



## Make Your Own Pretzels

### What you need

- .3L cup warm water
- 15ml active dry yeast
- .6L to .7L all-purpose flour
- 15ml sugar
- 5ml salt, for pretzel dough
- 1 egg + 15ml water, for egg wash
- Coarse salt, to taste, for finishing pretzels
- Mustard, for serving (optional)

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# Bubble & Fizz

Make This



## Bubble Prints

Bubbles made with food colouring create wonderful prints.

### What you need

- Shallow dish (pie plate or similar)
- Water
- Dish soap
- Food colouring
- Straws
- Paper

### Preparation

1. Fill your dish halfway with warm water.
2. Add a few drops of dish soap.
3. Add enough food colouring to make a bright, saturated colour.

### Where to next?

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# Bubble & Fizz

## Make This



### Hands on

1. Use a straw to blow bubbles in the colourful, soapy water.
2. Make a pile of bubbles that is taller than the edges of the dish.
3. Lay the paper gently down on top of the bubbles.
4. Carefully remove the paper and look at the print.

**HINT:** For young children, poke a hole through the straw 1cm from the top. This will prevent children from sucking the water into their mouths.

### Questions to ask

1. What shapes do you see in the bubble print?
2. How were the shapes made in the bubble print?
3. How can you change the shapes on the bubble print?

### What's next?

- Experiment with different amounts of soap.
- Layer several different colours of bubble prints on the same paper, without allowing them to dry.
- Try doing the activity Blow Paintings from “Wet and Dry” in *Big Science for Little Hands* ([scienceworld.ca/bslh](http://scienceworld.ca/bslh)).

**Community connections:** Find captured bubbles in your community (e.g. sourdough bread, seafoam candy, rocks such as vesicular basalt or pumice). Look at the bubbles with a magnifying lens to help see them.

**Vocabulary:** bubble, colour, shape, pop, blow, rough, buoyant

### Notes for next time:

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# Bubble & Fizz

All Together



## Swirling Milk

This experiment makes the the invisible motion of molecules visible! Water-based food colouring does not mix easily with the fat in milk, so in the milk, the drop of food colouring remains intact, because the surface tension of the milk isn't interrupted.

Soap has two ends—one that easily mixes with water and one that easily mixes with fat! When soap mixes with the fat in the milk, it breaks the bonds between molecules and reduces the surface tension. This causes the surface molecules of the milk to move away from the soap, pulling the food colouring along with them.

### What you need

- Milk (whole or 2%)
- Shallow dish (dinner plate, pie plate or similar)
- Food colouring (red, yellow, green, blue)
- Dish soap
- Cotton swabs

### Preparation

1. Pour enough milk into the dish to completely cover the bottom (approximately 1/2cm deep). Allow the milk to settle.

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#### MAKE THIS

Bubble Prints

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Swirling Milk

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# Bubble & Fizz

## All Together



### Hands on

1. Add one drop of each of the four colours of food colouring (red, yellow, blue and green) to the milk.
2. Keep the drops close together (but not touching), in the centre of the plate of milk.
3. Touch the centre of the milk with the cotton swab. Observe what happens.
4. Put a drop of liquid dish soap on the other end of the cotton swab.
5. Place the soapy end of the cotton swab back in the middle of the milk and hold it there for 10 to 15 seconds. Observe what happens.
6. Add another drop of soap to the tip of the cotton swab.
7. Experiment with placing the cotton swab at different places in the milk.

### Questions to ask

1. What happens when you touch the cotton swab to the centre of the milk?
2. What happens if you put a drop of soap on the cotton swab in the middle of the milk?
3. What makes the food colouring in the milk move?
4. What colours can you see in your milk, before and after the soap is added?

### What's next?

- Try using skim, 1%, 2% milk, or cream. Predict if each will react the same as the whole milk and then test your prediction!

### Notes for next time:

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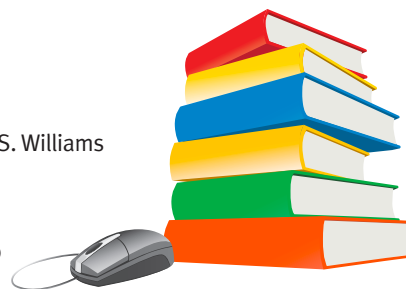
# Bubble & Fizz

More Ideas



## Teacher Resources

- *Science Wizardry for Kids* [Plastic Comb edition] by Margaret Kenda and Phyllis S. Williams
- *We Dare You!* by Vicki Cobb
- *Scary Science: 24 Creepy Experiments* by Shar Levine and Leslie Johnstone
- *Why Is Milk White?: & 200 Other Curious Chemistry Questions* by Alexa Coelho and Simon Quellen Field
- *Bubbles* by Dominique Jolin
- *The Bubble* by Chelsea Barker Roberts
- *Bubbles* by Doris Carlson



## Literature for Children

- *Walter the Baker* by Eric Carle
- *Thunder Cake* by Patricia Polacco
- *Bubble Trouble* by Margaret Mahy and Polly Dunbar
- *Trouble with the Bubbles* by Frank B. Edwards and John Bianchi

## Online Resources

- A pizza recipe for adults to make with their children ([scienceworld.ca/sites/default/files/BSLH\\_at\\_Home\\_SizeMatters.pdf](http://scienceworld.ca/sites/default/files/BSLH_at_Home_SizeMatters.pdf)).
- Adults explore more chemistry for preschoolers with “Mysterious Mixtures” ([scienceworld.ca/sites/default/files/BSLH\\_mixturepackages.pdf](http://scienceworld.ca/sites/default/files/BSLH_mixturepackages.pdf)).
- Five great science experiments to do at home presented by BuzzFeedYellow ([youtube.com/watch?v=ia8CKDlur3s](https://youtube.com/watch?v=ia8CKDlur3s)).
- A video showing the different ways you can play with bubbles from *Peep and the Big Wide World*. Includes instructions for adults ([peepandthebigwideworld.com/en/parents/activities/10/blowing-bubbles/](http://peepandthebigwideworld.com/en/parents/activities/10/blowing-bubbles/))
- An animated game where players counts bubbles as they pop from PBS kids with Curious George ([pbskids.org/curiousgeorge/busyday/bubbles/](http://pbskids.org/curiousgeorge/busyday/bubbles/)).
- More soap bubble activities from Science World ([scienceworld.ca/resources/units/bubbles](http://scienceworld.ca/resources/units/bubbles)).

## Where to next?

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Bubble Play

### EXPLORATION

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Yeast Bubbles

### MAKE THIS

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### ALL TOGETHER

Swirling Milk

### MORE IDEAS

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# Bubble & Fizz

## Songs



### FIVE BIG BUBBLES Fingerplay

Five big bubbles floating all around.  
Until one popped when it landed on the ground.



Four big bubbles floating high and free.  
Until one popped when it landed in a tree.

Three big bubbles floating quiet as a mouse.  
Until one popped when it landed on the house.

Two big bubbles floating down to land.  
Until one popped when it landed in my hand.

One big bubble still floating in the air.  
Until it popped when it landed in my hair.

### Did You Ever See A Bubble?

**Tune:** *Did You Ever See A Lassie?*



Did you ever see a bubble,  
A bubble, a bubble?  
Did you ever see a bubble  
That floated so high?  
It reached the tree.  
It's higher than me.  
Did you ever see a bubble  
That floated so high?

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