



# DREAMCATCHERS

THE LOS ALAMOS NATIONAL BANK POPEJOY SCHOOLTIME SERIES TEACHING GUIDE

## **B** The Underwater **BUBBLE SHOW**

MONDAY, NOVEMBER 13, 2017

GRADES: K - 12

Dreamcatchers Teaching Guides align with the Common Core State Standards and New Mexico State Learning Standards.

## Standards Addressed By Attending the Performance

### NMCCSS

ELA-Literacy.SL.2

### New Mexico Content Standards:

Fine Arts/Theatre  
& Dance: 3 & 5



“Individually, we are one drop. Together,  
we are an ocean” – RYUNOSUKE SATORO

## SYNOPSIS

**This is a one-hour version of the full-length show.**

B - The Underwater Bubble Show ... or... The Unexpected Journey of Mr. B in the Colorful Underwater World of Bubblelandia!

This show was created to tour the world for adults and children without barriers, especially language. Inspired by Cirque du Soleil, the show is rich in many elements of theater that work without speech including mime, puppetry, physical comedy, sand painting, and state-of-the-art special effects.

Kindled from childhood classics like *Alice in Wonderland*, *The Little Mermaid*, and *Peter Pan*, this show is a modern fairy tale with one major twist: each classic tale represents the journey of a child who grows up and learns something.

Mr. B is an average office worker who feels pressed by a thousand things to do in a world that seems too fast. When he discovers a little aquarium that appears like magic inside his briefcase, he becomes enchanted by the wondrous underwater world full of seahorses, dragon fish, starfish, mermaids, and lots of bubbles! It is a mystical place where he can sit back, relax, daydream, and enjoy life while experiencing a juggler in a huge plastic ball and dancers and acrobats playing as small colorful fish. Mr. B is performed by a skillful mime exaggerating his transformation from stressed out worker to blissed out wonder.

The latest laser technologies, massive LED screens, snow cannons, soap bubble tornadoes, theatrical fog, gigantic smoke rings, smoke-filled soap bubble machines, optical illusions, and many other surprises enrich the show. These elements make for a truly immersive “underwater” show. Add to that technology the work of Enrico Pezzoli and Dace Pecoli, two of the foremost bubble artists in the world. The pair have collaborated on countless projects since joining forces in 1998, including the opening ceremonies of the 2014 Olympics in Sochi.



## Vocabulary

**bubbles** - air wrapped in a liquid. For this show, the artists sometimes use bubbles made from soap and water (or other liquid). The outside and inside surfaces of a bubble consist of soap molecules. A thin layer of water lies between the two layers of soap molecules, like a water sandwich with soap molecules for bread. They work together to hold air inside.

**evaporate** - become vapor, volatilize; dry up.

**glycerin** - A sweet, syrupy liquid obtained from animal fats and oils or by the fermentation of glucose. It is used as a solvent and can be made into sweeteners, antifreeze, explosives, and soaps. When added to soapy water, it can make the bubbles stronger.

**marine** - pertaining to or inhabiting the sea, ocean, or other salt water.

**oceanography** - the scientific study of the world's ocean.

**SCUBA** - a device that lets a diver breathe air while underwater (letters stand for Self-Contained Underwater Breathing Apparatus).

**sea** - subdivision of the ocean, a smaller and shallower body of water than the ocean; often semi-enclosed or marginal between land and the ocean.

**shellfish** - aquatic animal with a shell; includes mollusks and crustaceans.

## Fun Ocean Facts for Students

Nearly three-quarters of the world and **99 percent of the living space** on this planet is made of water.

About **70% of the oxygen that humans breathe** comes from our planet's oceans.

**Starfish are not actually fish at all!** They do not have gills, scales, or fins like fish do. They move across the sea floor with hundreds of little "legs," similar to millipedes.

**The Mariana Trench descends** to 36,070 feet below the ocean's surface. To compare, Mt. Everest is only 29,029 feet tall.

Since the architecture and chemistry



of coral are very close to human bone, **coral has been used to replace bone** grafts, helping human bones to heal quickly and cleanly.

**Green turtles** can migrate more than 1,400 miles to lay their eggs.

**Alginates**, derived from the cell walls of brown algae, are used in beer, frozen desserts, pickles, adhesives, ceramics, explosives, paper, and toys.

## Interesting Bubble Facts for Students

**The Pear Soap Company** in England was responsible for the 19th century popularization of both soap and bubble blowing by altering a famous painting of a boy blowing bubbles to include a bar of its soap.

**Bubble toys** were largely limited to bubble pipes until the middle of the 20th century.

**In the vacuum of space, a bubble wouldn't be able to form** due to the lack of exterior air pressure to counteract the pressure from inside the bubble.

**A bubble gets its color** from light waves reflecting between the soap film's outer and inner surfaces. The distance between the layers gets smaller as the water evaporates, making the colors change.

**Bubbles can reflect** what's around them, including any faces peering at them.

Like all water, **a bubble will freeze** below 32 degrees Fahrenheit, but they tend to burst after a few seconds.

**Foam forms** when many bubbles join together.

**Bubbles can stretch** and become all kinds of crazy looking shapes. The bubble always shrinks into a round shape because spheres have the smallest surface area for the amount of volume.

**Bubbles pop** when the water between the soap film surfaces evaporates.

**The colder the outside temperature is**, the higher a bubble made from your breath might fly. That's because the warm air from your breath is lighter than cold air.



# How to Make Awesome Bubbles

## Materials

- 1 cup liquid dish soap like Joy or Dawn (not “ultra”)
- 6 cups distilled water inside a clean container that has a lid
- 1 tablespoon glycerin OR 1/4 cup light corn syrup

## Procedure

1. Pour the dish soap into the water and mix it without letting bubbles form (that’s for later!).
2. Put the glycerin or corn syrup into the mix and stir.
3. You can use it right away, but some bubble-lovers recommend covering and letting the bubble mix sit overnight.
- 4.

[Link: Kidsdiscover](#)

**Grades: K - 3**

**NMCCSS:**

ELA-Literacy.SL.2

**NM State  
Standards:**

Fine Arts/Visual  
Arts: Content  
Standards 1, 2, & 4

# Under the Sea Imagination Jars

## Lesson 1

**Objectives** Students will:

- create an underwater magical world

### Materials

- Mason jars (or baby food jars, wide mouthed plastic bottles, etc.)
- Blue food coloring
- Filtered water (tap water tends to give a cloudier look, but is fine to use)
- Ocean-themed plastic figurines. These can include plants, rocks, toy fish, treasure chests, etc.
- Blue and white glitter (optional)
- Glycerin (optional - this makes the glitter move more slowly when you shake the jar)
- Glue (Hot glue guns work the best, but any glue is fine)

### Procedure

1. Paint the jar covers (optional).
2. In a separate container, mix the blue food coloring with the water (1 - 2 drops per quart).
3. Add the sand, rock, plants, and other figurines to the jar.
4. (Optional) Include a few dashes of glitter and glycerin (it doesn't take much).
5. Fill the blue colored water all the way to the top of the jar.
6. Glue the lids on.
7. Shake gently - just like a snow globe!

### Extensions/Modifications

- Have the children write or tell a story about their magical underwater place. Who visits? What happens there? Are there secrets? Begin with the basics of "who," "what," "when," "where," "how," and "why?" Older students may expand upon this. Share the stories in small groups or as a class.
- Have students keep a diary of what happens in their underwater world for one week. At the end of the week have them put the adventures together into the story based on the outline above.

### Assessment

- Quality of participation

### Sources

[Hello Wonderful](#)  
[Delia Creates](#)

# Bubble Life and Temperature

## Lesson 2

Grades 4 - 8

NMCCSS

MATH.CONTENT.

MD.B.4

ELA-Literacy.SL.2

New Mexico  
Content  
Standards:

Science:

Strand 1.1; Strand 2.1;

Strand 2.3

**Objectives** Students will:

- determine if temperature affects how long bubbles last before they pop.
- establish a hypothesis such as: bubble lifespan is not affected by temperature. (Remember: You cannot scientifically prove a hypothesis, but you can disprove one).

### Materials

- identical clear jars, preferably with lids (baby food jars would work well)
- bubble solution (dish soap)
- measuring spoons
- thermometer
- stopwatch or clock that counts seconds

### Procedure

1. Use a thermometer to find locations that are different temperatures from each other. Alternatively, you can prepare water baths for your jars by filling bowls with hot water, cold water, and ice water. Keep the jars in the water.
2. Label each jar with either where you are placing it or the temperature.
3. Add the same amount of bubble solution to each jar. The amount used will depend on the size of the jars. Use enough solution to totally wet the inside of the jar and form as many bubbles as possible while still having liquid at the bottom.
4. Construct a table/chart for each jar. Record the temperatures and how long the bubbles lasted here.
5. Place the jars in the different temperature locations. Give the liquid time to reach that temperature.
6. Shake each jar individually for the same length of time. Record the temperature and the total time it took for the bubbles to pop.
7. Repeat the experiment three times.
8. Add up the times for how long the bubbles lasted and divide that number by how many times you did the experiment. This will give you an average time for how long it took the bubbles to pop.
9. (Older students) Graph the data. The Y-axis should be the length of time your bubbles lasted (probably in

seconds). The X-axis will show increasing temperature in degrees.

Ask the students if the temperature had an effect on how long the bubbles lasted. Did they pop more quickly in warmer or cooler temperatures or was there no apparent trend? Did there seem to be a temperature that produced the longest-lasting bubbles?

### Ask these questions to help form conclusions:

1. Was their hypothesis accepted or rejected? Can they propose an explanation for the outcome?
2. Do they think they would get the same results if the bubble solution was made with a different brand, or a different ratio of soap to water?
3. Most liquids will form bubbles if shaken. Do they think the same results would be achieved with other liquids?
4. What effect do they think temperature and/or humidity had on the outcome of the experiment?
5. Can they name some examples of foam and bubbles they encounter in everyday life? Does it matter how long the bubbles last?
6. Do they think there are any practical applications for this experiment? For example, do they think dishwashing liquid would still work after all the bubbles pop?

### Assessment

- Quality of participation

### Sources

ThoughtCo

## Questions to Engage & Connect

After seeing the show, ask your students to answer these questions:

**When you are having a hard day**, how do you relax? Do you go somewhere or do something special? How does it change your attitude?

**What special effects** did you observe in the show? What did they do? How did they enhance the show?

**How do you think sea mammals**—such as whales, seals, dolphins, and porpoises—stay warm in cold water?

**Have you ever seen a show without talking** before? Did you understand what was happening in the story? Why or why not?

**What do you think it is about bubbles** that everyone loves?

**Have you ever been to the ocean?** What was your favorite experience there?

**What do you want to share** with your family or friends about this show?

## Bonus Explorations

**Research a mermaid story** from another country or from books, movies, or plays that have mermaid type creatures (*Harry Potter and the Goblet of Fire*, *The Little Mermaid*, *Splash*, etc.) Report on them. Compare and contrast. Next, have students create a mermaid myth of their own. Have students plan out the story carefully before they begin. Have them share their stories with the class. They can illustrate their own stories or have a partner do it.

**Choose another sea creature from the show.** Find out as much as possible about it. Look in reference books, on the Internet, etc. Create a fact file on the sea creature. Next, create a character/personality for that creature. These creatures can be funny, sad, smart, interesting, etc., as long as the personality is based on what they learned. Is it a male or female, young or old? Does it have good eyesight? Is it fast, slow, timid, aggressive? Have students give it a personality and a name and draw a picture of their creature. Present it to the class.

**Sign Me A Story.** Since there is no talking in this show, the actors have to find other ways to communicate the story. Have the students play a game of charades to communicate with each other without talking. Then, introduce how the deaf communicate with sign language. Explain how sign language, math, and music are universal languages. Go to the free link for the *Sign Me A Story* adventure series. There are animated characters and pop-up videos for easy learning of signs, while also learning that it is okay to be different.

**Eight Things about Sharks.** Have students brainstorm ideas and

questions about sharks. Encourage them to do research to answer any questions they have. Have each student or group of students create a storyboard for a video documentary about sharks. Each student or group should fold a large sheet of paper into eight parts and illustrate or write eight of the important ideas about sharks they would want to show. Students should write captions for all drawings. Share with the class.

## Resources

### WEBSITES

**Soap Bubbler** 600 years of soap bubble fun, play, performance, science, tips, tricks, advice, facts & opinions.

**Formulae** for making bubbles.

A [link](#) to National Geographic videos and stories about the oceans of the world.

**Aquarium of the Pacific.** Glossary, photos, habitat, marine life, stories, videos, webcam resource kits, etc.

**The Ocean Conservancy.** Ocean wildlife fact sheets, photos, and references.

**U.S. Fish and Wildlife Services.** Endangered species lists and information.

**National Oceanic and Atmospheric Administration.** Species information, EPA administration, international affairs, science and technology.



**Los Alamos  
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POPEJOY

# Schooltime SERIES

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## About the Schooltime Series

The Los Alamos National Bank Popejoy Schooltime Series brings you national and international touring companies and performers you can't see anywhere else in or around Albuquerque. Each touring company is selected with youth and family audiences in mind, and our repertoire reflects the cultural diversity of our global community. The Schooltime Series includes new plays, familiar stories, literary works, biographies, mythologies, folk tales, music, dance, and puppetry. These professional performing artists create educational experiences designed to encourage **literacy, creativity, communication, and imagination.**

Send an email with your name and email address to [schooltimeseries@popejoypresents.com](mailto:schooltimeseries@popejoypresents.com) requesting to be added to the mailing and monthly newsletter list. Visit us at [schooltimeseries.com](http://schooltimeseries.com) and [facebook.com/schooltimeseries](https://facebook.com/schooltimeseries).

## Popejoy Hall

Popejoy Hall is New Mexico's premier nonprofit venue for the performing arts and entertainment. Our mission is to provide access to the performing arts for all New Mexicans.

## Etiquette

The inside of a theatre is called a "house" and to get along, have fun, and enjoy the shows, there are rules to follow. Schooltime provides a wonderful opportunity to learn how good behavior in a live theater is different from watching television at home. For guidelines to practice with your class and chaperones go to [schooltimeseries.com/house-policies](http://schooltimeseries.com/house-policies).

## House Policies

Please visit our website for detailed information about **House Policies**. This includes our guidelines on safety, special needs, food and drink, backpacks, cell phones, photography, recordings, and more.

## Credits

Dreamcatchers are Teaching Guides produced by the Education Department of Popejoy Hall, Albuquerque, New Mexico. Selected Dreamcatchers Teaching Guide materials provided by **B-The Underwater Bubble Show**, **Trivials**, **Kids Discover**, **Smithsonian's Ocean Planet**, and **Discovery Education**.

## The University of New Mexico

The Los Alamos National Bank Popejoy Schooltime Series is a program of The University of New Mexico.