



What is Freshwater and What is Saltwater?

Focus/Overview

The amount of water, and the amount of salts dissolved in that water, determines the type of biological community a particular ecosystem can support. In this lesson, students will use their sense of taste to distinguish between fresh and saltwater. They will locate on a map of Louisiana major rivers (freshwater), the Gulf of Mexico (saltwater), and the Barataria Bay (an estuary – where fresh and saltwater mix). They will set out salt and freshwater samples to evaporate overnight and then make observations on what they find the next day.

Learning Objectives

The learner will...

- use his/her five senses to describe the difference between freshwater and saltwater.
- describe and illustrate what happens after water evaporates from a saltwater and freshwater solution.
- Identify the Gulf of Mexico, rivers, bays and estuaries on a map of Louisiana and whether they contain freshwater, saltwater, or a mix of both fresh and saltwater.

Louisiana Science Grade Level Expectations

K: GLE-4 1: GLE 5 2: GLE 6	Use the five senses to describe observations (SI-E-A3).
2: GLE19	Describe and illustrates what happens after water evaporates from a salt or sugar solution (PS-E-A5).
2: GLE 37	Compare bodies of water found on Earth (ESS-E-A2).

Materials List

- 1 gallon of distilled water
- 1 gallon of saltwater
- small paper cups (2 per child)
- napkins
- small clear plastic cups (2 per group)
- paper maps of Louisiana

Background Information

Rivers deliver freshwater to the oceans and seas. In Louisiana, the Mississippi and Atchafalaya Rivers carry large amounts of freshwater to the Louisiana coast and discharge this freshwater into the Gulf of Mexico or large bays protected by barrier islands. The places where the freshwater from the rivers mixes with saltwater from the Gulf of Mexico are called estuaries. This mixing of waters happens in the large bays and protected marshes along the Louisiana coast.

The salinity of water that occurs in a particular place is one of the important things that determines the kinds of plants and animals that can live in that location. Certain kinds of animals and plants can only live in freshwater marshes, while others prefer a more salty environment of the saltwater marshes. This preference for environment, based on the saltiness of the water, means that the marshes can be divided into zones based on the amount of salt in the water. The most inland zone is the freshwater marsh. The next zone closer to the Gulf of Mexico is slightly salty and is called the brackish marsh. The marsh

BTNEP Connection

Water Quality

Grade Level

K-8

Duration

35 minutes

Subject Area

science

Setting

classroom

Extension Areas

language arts, social studies, mathematics, art

Vocabulary

freshwater
saltwater
estuary

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V. Butler's Writing Team



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closest to the beach is called the salt marsh. These zones are all part of an area called an estuary, which is a place where freshwater from the rivers mixes with saltwater from the sea.

Estuaries are very important nurseries for many species of fish, crustaceans and shellfish. Many species of animals spend at least part of their life cycle in the protected waters of the estuary feeding and growing larger.

Advance Preparation

1. The teacher should have chart paper ready and colorful map of the United States and Louisiana.
2. The teacher should have enough paper cups labeled with A and B for the taste test.
3. Label a container of distilled water with a letter A. Prepare 1 gallon of saltwater by adding 3 tablespoons of salt to the gallon of water and mixing well. Label this container B.

Procedure

1. Begin by asking the children if they have ever visited a beach. What things might you find on a seashore (*seashells, sand, trash, salty water, etc.*). Has ever been swimming in a river? (If not, then a swimming pool). What kinds of things do you find in and along a river? (*trees, bushes, minnows, etc*) Great!
2. In what ways are the sea and the river similar? (*Both have water and a place where the water meets the land. Both have plants and animals that live in or near them.*) In what ways are the sea and the river different? (*Certain animals and plants only live in one place and not the other. The water tastes different – rivers have freshwater and the sea has saltwater.*) Let's keep thinking about the ways that these two places, rivers and the sea are similar and different. Let's do an experiment to see if we can tell the difference between freshwater and saltwater by using our senses.
3. The students will conduct an experiment tasting the difference between the freshwater and saltwater. Each student will be given one tongue depressor and two small paper cups each filled with the appropriate water. One will have A for freshwater and B for saltwater. Have students dip the tongue depressor into Cup A and then place it on their own tongue. This can be done several times until they can feel the water on their tongue. The same procedure will be done for Cup B. As soon as the students finish their sampling, they will complete the following sentence in their journal: **I tasted the two water samples. I think Cup A contains _____ water and Cup B contains _____ water.**
4. Discuss the results of the experiment. Have students describe how freshwater tastes different from saltwater. The students should tell the teacher what they have learned about the taste of the two types of water.
5. Referring back to the large map of Louisiana, have students locate some of the larger rivers in Louisiana (the Mississippi, the Atchafalaya, the Red, Bayou Lafourche, etc.). Have students decide whether they carry freshwater or saltwater. Have students locate the Gulf of Mexico. Does the Gulf of Mexico contain fresh or saltwater?
6. What about the place where rivers meet the sea? Locate Barataria Bay on the map. Is the water here fresh or salty? Or both fresh and salty? Right! The place where the sea and rivers meet is contains a mix of both fresh and salty water! It is a special place called an **estuary**. An estuary is a place where freshwater and saltwater mix. If we look again at the map, we can see at the southern part of Louisiana the Mississippi River and the Gulf of Mexico meet. The two types of waters are mixing and forming an estuary.
7. Have groups of students take a pair of clear plastic cups label one FRESHWATER and the other SALTWATER. Have them put their group names on each plastic cup. Have students measure two tablespoons of freshwater from Cup A and place it in the clear FRESHWATER cup. Have them measure two tablespoons of saltwater from Cup B and place it in the clear SALTWATER cup. Place the clear plastic cups on the window sill and tell students that they will be checking the cups during the next science class.
8. To close today's lesson, the teacher will give each pair the students the blackline master, Fresh or Salty? (**Blackline Master #1**). At their desks, students will locate with their partner where the freshwater is in the state (rivers) and to locate the saltwater (Gulf of Mexico). Put an F next to the water bodies that contain freshwater, an S next to the ones containing saltwater, and an F/S for water bodies that have a mix of salt and freshwater. Have students summarize what they learned from the experiment and about the waters of rivers and the sea.

9. FOLLOWUP. The next science class, have students retrieve their cups from the window sill. Using What's Left Behind? (**Blackline Master #3**), have students record a description of what they find in the cups on their worksheet. Discuss what they found in their two cups. (*Students should find salt crystals/ residue Cup B. There should not be much residue in Cup A – particularly if you used distilled water. When water evaporates, it leaves behind all the dissolved materials, such as salt, sugar, etc., behind.*)

Blackline Masters

1. Fresh or Salty?
2. Fresh or Salty? (Answer key)
3. What's Left Behind?

Assessment

- The teacher will informally assess the students knowledge by their answers.
- The teacher will check the students map to assess whether they can locate the Mississippi River, the Atchafalaya River, and the Gulf of Mexico, as well as whether they have correctly identified fresh, salt and mixed water bodies.

Extensions

Language Arts:

Set up a reading center with several books and magazines related to Louisiana and its habitats. After the students look through the books, they can make puppets and retell the stories. The students should identify whether the books and magazines discuss freshwater and saltwater.

Social Studies:

Set up a felt map of the United States on a wall. The students will put up felt pieces of Louisiana, Gulf of Mexico, and rivers. Students will locate and self check the geography.

Math:

Students can use a paper Louisiana map and count the number of rivers in the state. The students can also use unifix cubes to make a pattern and build a replica of the state.

The Arts:

The teacher will set up butcher paper with modeling clay. The students will make the state of Louisiana and use different colors of clay to add the different types of water.

Resources

Fontenot, Mary Alice. 1985. **Clovis Crawfish and His Friends. (The Clovis Crawfish Series).** Pelican Publishing Company.

In the Louisiana bayou Clovis Crawfish tries to prevent M'sieu Blue Jay from making a meal out of his friend Gaston Grasshopper. Ages 4-8.

Holling, Holling C. 1951. **Minn of the Mississippi.** Houghton Mifflin Company.

This book follows the adventures of Minn, a three-legged snapping turtle, as she slowly makes her way from her birthplace at the headwaters of the Mississippi River to the mouth of river on the Gulf of Mexico. Ages 9-12.

Johnson, Rebecca L. Sept. 2004. **A Journey into an Estuary. (Biomes of North America).** Lerner Publications Company.

Reading level: Ages 9-12.

Peterson, David. 2000. **The Gulf of Mexico. (True Books: Geography: Bodies of Water).** Children's Press.

Reading level: Ages 9-12

Seibert, Diane. 2001. **Mississippi.** HarperCollins.

In a flow of powerful words and images, Siebert invites readers on a poetic journey down America's most famous river: "I am the river,/Deep and strong./I sing an old, enduring song/With rhythms wild and rhythms tame./And Mississippi is my name." The story moves from the headwaters of the Mississippi River to the Gulf of Mexico. Ages 4-8

Walker, Sally M. 2003. **Life in an Estuary: The Chesapeake Bay.** Lerner Publications Company.

Very informative book on the biology of the Chesapeake Bay estuary.

Name _____

Fresh or Salty?

On the map below locate the following bodies of water:

- Mississippi River
- Gulf of Mexico

- Atchafalaya River
- Barataria Bay

Put an F next to the water bodies that contain freshwater, an S next to the ones containing saltwater, and an F/S for water bodies that have a mix of salt and freshwater.



Summarize what you learned today by finishing the following sentence:

I learned that freshwater is different from saltwater because _____
_____.

Freshwater is found in _____ and saltwater is found in _____.
Freshwater and saltwater mix in a place called an _____.

Name _____

Fresh or Salty?

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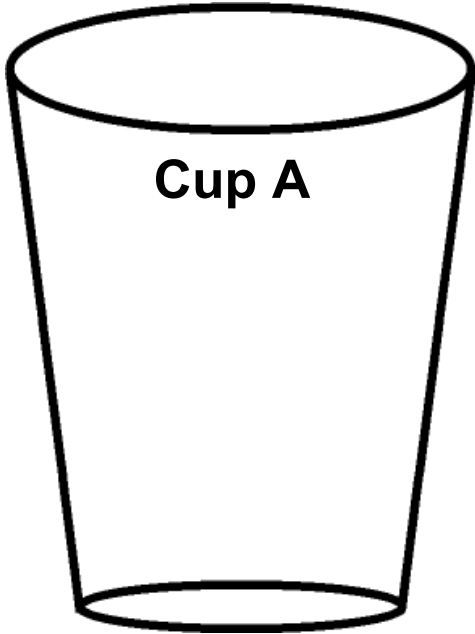
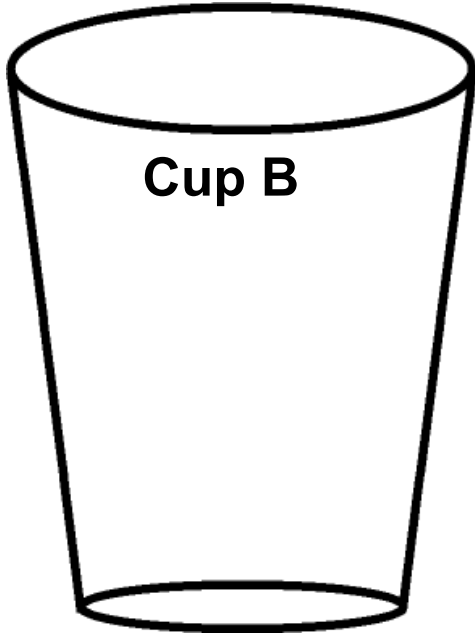
Summarize what you learned today by finishing the following sentence:

I learned that freshwater is different from saltwater because _____

Freshwater is found in **RIVERS LAKES AND PONDS** and saltwater is found in **OCEAN AND THE GULF OF MEXICO**. Freshwater and saltwater mix in a place called an **ESTUARY**.

Name _____

What's Left Behind?

<p><i>What did you put in this cup yesterday?</i> _____ _____ _____</p>	<p><i>What did you put in this cup yesterday?</i> _____ _____ _____</p>
<p><i>Draw what you see in Cup A below.</i></p> <div data-bbox="263 705 734 1335"></div> <p><i>Freshwater Cup</i></p>	<p><i>Draw what you see in Cup B below.</i></p> <div data-bbox="883 705 1354 1335"></div> <p><i>Saltwater Cup</i></p>

Summarize what you learned today by describing what happens to saltwater and freshwater that is left in cups evaporates.
