



Island STYLE



Connection to the Gulf of Mexico and the Galveston Bay



SUBJECT:

ELA

GRADE LEVEL:

6th

TIMEFRAME:

45 minutes

MATERIALS:

- Computer
- Access to Google Earth
- Projector
- Screen
- Article
- Sticky notes
- Laminated/magnetized word and definition strips
- Blank strips for additional words
- Paper
- Pencils



ACTIVITY SUMMARY:

Students of Galveston Island often hear Galveston Bay and assume it is the water touching their island. Through this lesson they will learn the location of Galveston Bay and the Gulf of Mexico, and why those bodies of water are important to them.

LEARNING OBJECTIVES:

Students will build background knowledge to make connections to the Gulf of Mexico through reading scientific text.

ALIGNMENT:

TEKS:

- 6.5 (A) - Establish purpose for reading assigned and self-selected text
- 6.5 (B) - Generate questions about text before, during, and after reading to deepen understanding and gain information
- 6.5 (E) - Make connections to personal experiences, ideas in other text, and society
- 6.5 (I) - Monitor comprehension and make adjustments such as rereading, using background knowledge, asking questions, and annotating when understanding breaks down.
- 6.5 (H) - Synthesize information to create new understanding.

Ocean Literacy Principles:

- 1 Earth has one big ocean with many features
- 5 The ocean supports a great diversity of life and ecosystems
- 6 The ocean and humans are inextricably interconnected
- 7 The ocean is largely unexplored

VOCABULARY:

Use the stop-sign method to have students pull words they do not know. May include these science words and others.

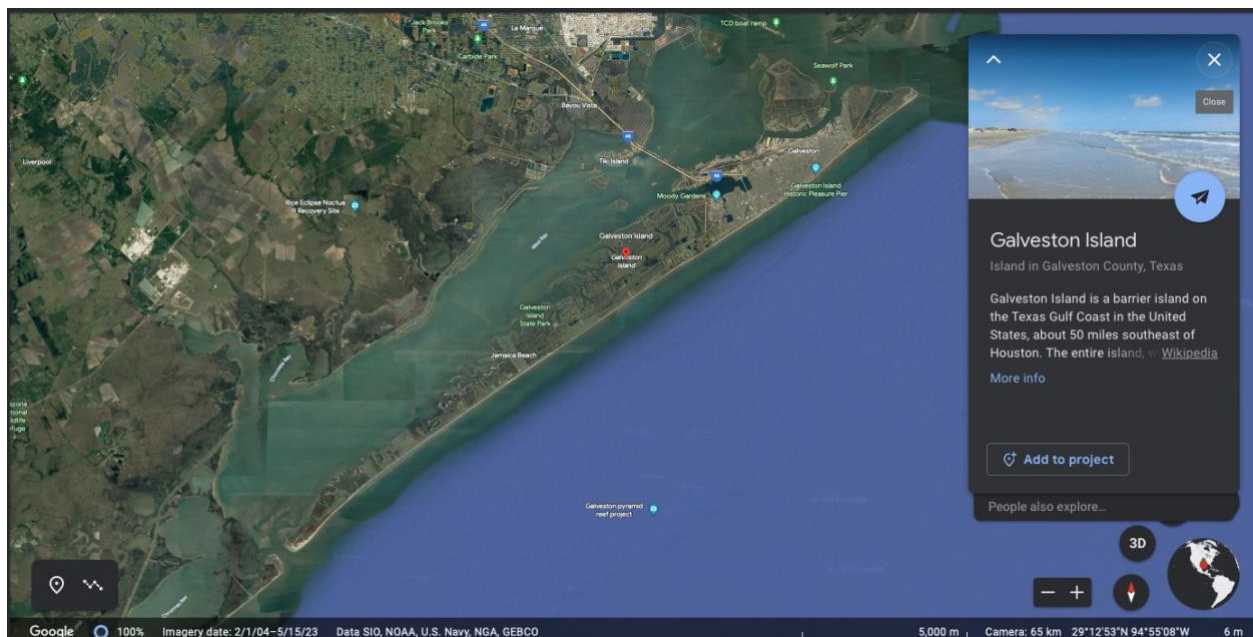
- **Bay** - A broad inlet of the sea where the land curves inward
- **Bayou** - A marshy outlet of a lake or river
- **Ecotourism** - Tourism directed toward exotic, often threatened, natural environments intended to support conservation efforts
- **Estuary** - The tidal mouth of a large river, where the tide meets the stream
- **Fauna** - Animals of a particular region, habitat, or geological period
- **Inflow** - A large amount of money, people, or water that moves or is transferred to a place
- **Marsh** - An area of low-lying land which is flooded in wet seasons or at high tide, and typically remains waterlogged at all times
- **Megafauna** - Animals that are large enough to be seen by the naked eye
- **Microfauna** - Small, often microscopic animals
- **Nursery** - A place or natural habitat that breeds or supports animals
- **Outlet** - A pipe or hole through which water or gas may escape
- **Prairie** - A large open area of grassland
- **Spawning** - To release or deposit eggs for reproduction
- **Terrestrial** - Of, on, or relating to the earth
- **Upwelling** - A rising of seawater, magma, or other liquid
- **Watershed** - The area that channels rainfall and snowmelt to creeks, streams, and rivers and eventually to outflow points like rivers, bays, and oceans

PREPARATION:

Access Google Earth or other navigation site to show a zoomed in area of the school. Print articles for each student to read.

INTRODUCTION:

Students will look at Google Earth on the projector. The teacher will zoom out slowly to talk about areas they see and know.



GUIDED PRACTICE:

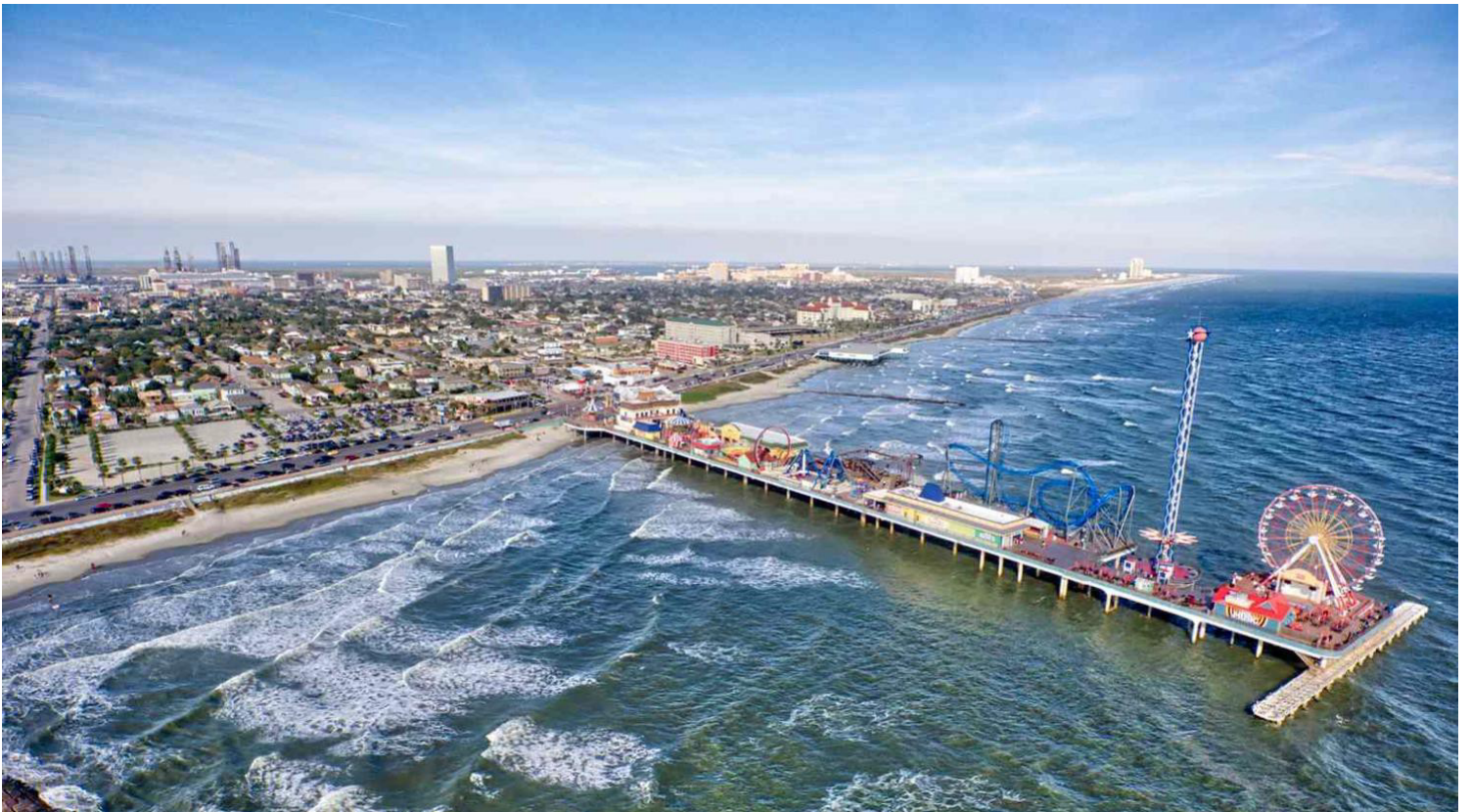
Students will read a short-leveled document on the Galveston Bay and the Gulf of Mexico, circling words they do not know the meaning of along the way. Students will transfer these words to a sticky note and hand it to the teacher. Teacher will compile the list and go through vocabulary words that need defining. Teacher will use the prepared word and definition strips as they are going through the stop sign word list. Two columns should be created on the board, relevant vocabulary and other words that need defining.

INDEPENDENT / GROUP PRACTICE:

Students will write a paragraph explaining one area of the Galveston Bay or Gulf of Mexico that they would like to learn more about using academic and lesson vocabulary.

DISCUSSION QUESTIONS:

- Who uses these areas?
 - Refer to the areas that the students recognized in the Google Earth introduction activity
- What types of activities happen in these areas?
 - Recreation, nature, business
- Poll the class on their topics using categories such as those that wanted to learn more about plants, animals, or geography.



Getting to Know the Galveston Bay and the Gulf of Mexico Quick Facts			
Location		North of Galveston Island	South of Galveston Island
Primary Inflow		Trinity River + San Jacinto River	Rio Grande + Mississippi River
Ocean Connection		Gulf of Mexico	Atlantic Ocean
Maximum Length		30 miles	559 miles
Maximum Width		17 miles	932 miles
Surface Area		600 sq miles	600,000 sq miles
Average Depth		6 ft	5,299 ft
Maximum Depth		10 ft	17,070 ft

BACKGROUND INFORMATION:

THE GALVESTON BAY

Galveston Bay is a bay in the western Gulf of Mexico along the upper coast of Texas. It is the seventh-largest estuary in the United States, and the largest of seven major estuaries along the Texas Gulf Coast. It is connected to the Gulf of Mexico and is surrounded by marshes and prairies on the mainland. The water in the bay is a complex mixture of sea water and fresh water, which supports a wide variety of marine life. With a maximum depth of about 10 feet and an average depth of only 6 feet, it is unusually shallow for its size.

Features

The Galveston Bay system consists of four main bodies of water: Galveston Bay proper, Trinity Bay, East Bay, and West Bay. Galveston Bay has two outlets to the Gulf of Mexico: Bolivar Roads between Galveston Island and the Bolivar Peninsula and San Luis Pass at the west end of Galveston Island. A majority of the bay's inflow comes from the Trinity River, which contributes 7,500,000 acre-feet of freshwater annually. The San Jacinto River contributes another 500,000 acre-feet. Local coastal watersheds contribute the remainder.

Plants and Animals

This mixing of waters from different sources provides nursery and spawning grounds for many types of marine life including crabs, shrimp, oysters, and many varieties of fish, thereby supporting a substantial fishing industry. The deeper navigation channels of the bay provide suitable habitats for bottlenose dolphins, which feed on the abundant fish varieties. Additionally, the bayous, rivers, and marshes that ring the bay support their own collection of ecosystems, containing diverse wildlife and enabling freshwater farming of crawfish. The wetlands that surround the bay support a variety of fauna. Notable terrestrial species include the American alligator and the bobcat, while bird species include the roseate spoonbill, great and snowy egret, white-faced ibis, and mottled duck.

Industry

Today, Galveston Bay is encompassed by Greater Houston, the fifth-largest metropolitan area in the United States. The Port of Houston, which has facilities spread across the northwestern section of the bay, is the second-busiest port in the nation by overall tonnage. The Houston Ship Channel, which connects the Port of Houston to the Gulf, passes through the bay. It is a partially man-made feature created by dredging.

A large commercial fishing industry has grown around Galveston Bay, with significant production of shrimp, blue crab, eastern oyster, black drum, flounder, and sheepshead. With its diverse marine life, Galveston Bay produces more seafood than any estuary in the United States except the Chesapeake.

Galveston Bay supports a significant recreation and tourism industry. Over 40% of Greater Houston residents participate annually in hiking and swimming along the bay, while 20% go fishing and 15% go boating. The recreational fishing industry supports over 3,000 jobs in the bay area.

With over 600 species of birds, Galveston Bay is a popular destination for birdwatching. This sort of ecotourism generates millions of dollars in annual revenue for Chambers County, which is home to the Anahuac National Wildlife Refuge and High Island.

THE GULF OF MEXICO

The Gulf of Mexico is an ocean basin of the Atlantic Ocean, mostly surrounded by the North American continent. It is bounded on the northeast, north and northwest by the United States; on the southwest and south by Mexico, and on the southeast by Cuba.

Features

The Gulf of Mexico basin is roughly oval in shape and is approximately 932 miles wide. It is connected to part of the Atlantic Ocean through the Florida Straits between the U.S. and Cuba, and with the Caribbean Sea via the Yucatán Channel between Mexico and Cuba. Because of its narrow connection to the Atlantic Ocean, the Gulf experiences very small tidal ranges. The Gulf of Mexico is 41 percent continental slope, 32 percent continental shelf, and 24 percent abyssal plain with the greatest depth of over 17,000 feet in the Sigsbee Deep.

The US portion of the Gulf coastline spans 1,680 miles, receiving water from 33 major rivers that drain 31 states. The land that forms the gulf's coast, includes many long, low-lying narrow barrier islands, and are characterized by marshes and swamps as well as stretches of sandy beach.

Plants and Animals

The outer margins of the wide continental shelves receive cooler, nutrient-enriched waters from the deep by a process known as upwelling, which stimulates plankton growth. This attracts fish, shrimp, and squid. River drainage and storm runoff from coastal cities also provide nutrients to the coastal zone.

Deep sea organisms include hydrogen vent communities with bacteria and microfauna. Megafauna (larger organisms) such as crabs, fish, and cetaceans also live in the deep waters. Recently, resident Bryde's whales within the gulf were reclassified as Rice's whales, a separate endemic (native to this area only) subspecies, making them one of the most endangered whales in the world.

Industry

The Gulf of Mexico supports major American, Mexican, and Cuban fishing industries along the wide continental shelf. Major catches include red snapper, amberjack, tilefish, swordfish, and various grouper, as well as shrimp and crabs. The Gulf of Mexico yields more finfish, shrimp, and shellfish annually than the rest of the Atlantic coast combined. The shelf is also where offshore drilling rigs are placed, most of which are situated in the western gulf. Other important industries along the coast include shipping, petrochemical processing and storage, military use, paper manufacture, and tourism.

ASSESSMENT OF LEARNING:

Students should use the vocabulary introduced in the article in their paragraphs correctly.

CLOSING:

As you teach lessons linked to the Galveston Bay Watershed and the Gulf of Mexico, you can use the “I Wonder” Board as a closure assignment.

You might ask what else the students want to learn about the Galveston Bay and the Gulf of Mexico. Students may ask about the ocean floor, water depth, food chain related questions, or even how boats anchor in places with corals. All their questions (even the ones asked multiple times) will go on the “I Wonder” Board. If a question was answered in the lesson, it can still be placed on the board.

Students may even have follow-up questions after these lessons that could be added to the board. The goal is to have a place for all questions about the Galveston Bay and the Gulf of Mexico in one place.

EXTENSION:

Students can research their chosen topic to learn more about Galveston Bay and the Gulf of Mexico.

NOTES:

<https://www.fws.gov/doiddata/dwh-ar-documents/1187/DWH-AR0005539.pdf>

https://www.eia.gov/special/gulf_of_mexico/

<https://web.archive.org/web/20061003033047/http://www.epa.gov/gmpo/about/facts.html>

<https://www.noaa.gov/information-technology>

<https://www.epa.gov/gulfofmexico>