

MANGROVE SWAMPS

Mangroves | On the Island

Approximate Length of Lesson

Two 45-minute class sessions

Approximate Number of Minutes Weekly

90 minutes

Materials

- Flash cards
- Tape or tac
- *Our High Island Home* book
- Pictures of different mangroves
- K-W-L chart
- Materials to demonstrate water flowing in and out of mangrove swamp: modeling clay, mud, small rocks, tray, salt water, sand, grass
- Paper to create illustration
- Markers

Teaching Notes

Which content standards from your entity address the essential questions?



Essential Question:

Why are mangroves important?

What other environments or habitats are near mangrove swamps? In what ways are they connected to each other?

Learning Goals

Students will be able to:

- State where mangroves can be found.
- Describe habitats from mangroves to the ocean.
- Describe habitats from mangroves toward the land.
- Explain some ways in which these habitats are connected to each other, using examples.

Content Standards

(Record corresponding standards in space below. E.g., Grade 5: FSM Sci.1.5.2 Explain cause and effect relationships in nature, for example, that a lack of rain results in plants being stressed and sometimes dying.)

Teaching Notes

SA: Assess the illustration and labels using rubric criteria: a) inclusion of environments on both sides of mangroves; b) demonstrates understanding of each environment through details illustrated; c) names environments accurately. Levels for each criteria: emerging (1), satisfactory (2), effective (3).

Create K-W-L Chart on board or on poster paper.

Model for students how to create meaningful sentences before having them write on their own.

Provide sentence frames with key vocabulary to answer questions, e.g., in English:

- *Mangroves live between _____ and _____.*
- *We can find _____ in a mangrove swamp.*
- *Mangroves **protect** the land and animals. Mangrove swamp is a **habitat** for ____.*

Before reading aloud, do a picture walk through the book to identify title, author, and ask/answer questions about the pictures.

Formative Assessment (FA)

- Note student responses to comprehension questions and create a mini lesson to address observed needs of an individual, small group or whole class.
- Use information gathered under 'K' and 'W' of the K-W-L chart to expand and clarify student understandings and curiosity about mangroves. This may involve vocabulary and language structures to communicate meaning and can be done immediately or as a mini lesson the next day.

Summative Assessment (SA)

Students illustrate mangroves in relation to other habitats on a tropical island and how the water flows through those habitats from mountain to ocean. Teacher uses rubric to provide specific feedback on the accuracy of the illustrations and labels to help students move to the next level of the rubric.

Learning Sequence

Activate Prior Knowledge

- Refer to the Gallery Walk posters from lesson 1 and remind students of the key points discussed and learned: Why are mangroves important to us? What are people doing that harms mangroves? What do you think can be done about it?
- Read aloud the essential questions for this lesson. Give students some time to think about the questions.
- Ask for volunteers to share their thoughts.
- Show pictures of different mangroves and complete the "K" (What we know) and "W" (What we want to know/questions) columns of K-W-L chart on mangroves.

Introduce Vocabulary

- Write each word on flash card, show each word, and give definition. Post words to the word wall created in lesson 1.
- Have class draw pictures for each word and use key vocabulary to create meaningful sentences related to the picture.

Read Aloud Our High Island Home

Read aloud "Who Lives Where on Our Island?" (pp. 6-7), "Mangrove Swamp" (pp. 20-21), "River" (pp. 16-17), "Seagrass Bed" (pp. 18-19), and "Reef" (pp. 22-23).

Teaching Notes

Ask students to add to their Gallery Walk posters to reflect new learning from “Mangrove Swamp” and add new words to the word wall as needed to describe mangrove swamp (e.g., words for animals and plants).

Provide sentence frames with key vocabulary to answer questions, e.g., in English:

- _____ is located at/near/on _____.
- We can find _____ in _____.
- _____ is a **habitat** for _____.

Sample responses: “Seagrass Beds”: protect young fish; covers reef and lagoon.
 “Reef”: the large structure of the reef provides space for different animals; algae is a food source for small animals, and the small animals are food source for larger animals.

Ask comprehension questions for “Mangrove Swamp”:

- Point to map and ask: Where do mangroves grow?
- Point to illustrations on the right and ask: What can we find in mangrove swamp?
- What services do mangroves provide?

Do a word study on the similarities and differences between mangroves (general term for mangrove trees), mangrove swamp (specifically referring to the habitat/flooded areas with mangrove trees), and mangrove forest (specifically referring to an area with mangrove trees and shrubs).

Ask the following on “River”, “Seagrass Bed” and “Reef”:

- Point to the map for each habitat and ask: Where can we find _____?
- Point to the illustrations on the right and ask: What can we find in _____?
- What does _____ do?
- For “River”: Why do you think some animals found in a mangrove river can live in both fresh and salty water?
- For “Seagrass Beds”: what important role does seagrass play in the area?
- For “Reef”: Why do you think there are so many more kinds of animals living in the reef than in any other place in the ocean?

Observe students and ask volunteers to share responses as a “temperature check” to see if students are learning this new knowledge.

Refer to illustrations from *Our High Island Home* and pictures of different mangroves. Discuss the relationship between a mangrove swamp and other habitats on the island:

- Where do mangroves grow?
- How is the mangrove swamp connected to other habitats? For upper grade students, refer to the river, seagrass bed, and reef.
- Where does the water come from? Where does the water flow to?

Teaching Notes

Add the words "brackish" and "sediment" to word wall.

Encourage students to answer the questions orally first and then write their responses. Model as needed.

Add the word "coast" to word wall.

Before next class, assess illustration and labels using rubric. Next class provide feedback to improve student learning.

Create a model and demonstrate the water flow in and out of mangroves.

- Use modeling clay or mud to build "land" with slope, a tray of salty water with sand that connects to "land". For upper grade students, use clay or small rocks to build a "reef" in the salty water, and create seagrass bed in the salty water using sand and grass.
- Use fresh water and create a "river" going downhill from the top of the slope.

Ask students for written responses:

- What happens to the area where the fresh and salty water meets? (brackish water)
- What happens when we throw things into the water from top of the slope?

For upper grade students, ask for written responses:

- What happens when soil falls into the water at the top of the slope? (It goes downhill along the river, and becomes sediment.)
- Where would the soil go if the mangrove swamp were not there? (If the mangrove swamp was not there, then the soil would go straight into the seagrass bed and reef.)
- How are the mangrove swamp, seagrass bed, and coral reef connected? (They are major life-supporting systems along the coast and are connected to each other. Different types of animals feed and live in these habitats. Mangrove swamps stop eroded soil from top of the slope and filters sediments to the brackish water. Seagrass grows in and stabilizes the reef. The reef protects mangrove swamps and seagrass beds from waves and currents along the coast).

To demonstrate what they have learned, pairs illustrate how water flows and connects the various habitats. They label using words from lessons 1 and 2.

Revisit K-W-L chart, answer questions, record new learning, and brainstorm additional questions to extend learning.

Lesson Closure

Review the essential questions for this lesson. Ask for responses based on what was learned.

Constructing Ideas

| Language Functions | Related Sentence Structures in the Local Language (to be completed by teacher) | Related Sentence Structures in English |
|--|---|--|
| State the location | | _____ is/are located (<u>at/near/on</u>) _____. The mangroves grow <u>between</u> _____. _____ live <u>in</u> mangroves. We can find _____ <u>in</u> _____. |
| Describe relationship | | Water flows <u>from</u> _____ to _____. |
| Describe cause/ effect relationship | | If _____ then _____. |
| Ask and answer questions | | Who, What, When, Where, Why questions |

Key Vocabulary in Local Language:

Key Vocabulary in English: flooded, protect, habitat

