

Unit Title: Migration Vacation in Mexico:
Bats, Sea Turtles, and Butterflies on The Move

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Broken Arrow, Oklahoma

Subject Area: Science and Social Studies

Topic: Bats, Sea Turtles, and Butterflies in Mexico

Grade Level: K-2

Time Frame: 3-4 Weeks

Brief Summary: Students will learn about three species of animals (mammals - bats; reptiles - sea turtles; and insects - butterflies) that spend a portion of their lives living in Mexico. The Bat Unit will give a general overview of bats. The Sea Turtle Unit will focus on the seven species of sea turtles found in Mexico and the Butterfly Unit will focus specifically on the monarch butterfly. The goal of this study is to familiarize young children with the process of migration, enrich their knowledge about three different types of animals found in Mexico, and help them to learn more about the conservation efforts that are helping those animals.

Established Goals: Oklahoma PASS Skills

- ❖ Science Objective 7: Discuss how hibernations, migration, and camouflage are ways organisms increase their survival.
- ❖ Science Objective 14: Illustrate that plants and animals have different structures that help them live in environments such as air, water, or land.
- ❖ Science Objective 16: Demonstrate that plants and animals have life cycles that include developing into adults, reproducing, and eventually dying. The details of this life cycle are different for different organisms.
- ❖ Science Objective 17: Discuss that animals have different structures that enable them to function in their environment (e.g., feathers for flight, shell for protection).

Migration Vacation in Mexico:
Bats, Sea Turtles, and Butterflies on the Move

Bats



Desired Results for Bats

Understandings: Students will understand what bats look like, how bats live, what they eat, and where they live. They will learn about many different species of bats with an emphasis on the Mexican free-tailed bats.

Central Questions:

- ❖ Where do bats live?
- ❖ Are bats really blind?
- ❖ What do bats like to eat?
- ❖ Are bats helpful or harmful?
- ❖ What type of animals are bats?
- ❖ What do different species of bats look like?
- ❖ Why don't we see bats flying during the daytime?

Students will know:

- ❖ Bats are mammals.
- ❖ Bats are nocturnal.
- ❖ Bats live all over the world.
- ❖ Body structure of the bat.
- ❖ Bats are important to the ecosystem.
- ❖ Bats use echolocation to fly in the dark.
- ❖ There are more than 900 species of bats.
- ❖ Different species of bats feast on various types of foods such as insects, fruit, fish, frogs, and even blood.

Students will be able to:

- ❖ Tell how bats help the ecosystem.
- ❖ Identify the main body parts of the bat.
- ❖ Distinguish facts from opinions about bats.
- ❖ Understand how mother bats recognize their own babies.
- ❖ Identify Mexican free-tailed bats and understand their migration patterns.

Assessment Evidence

Performance Tasks:

1. Students will give an oral report on bats at the end of the unit.
2. Students will label the main body parts of a bat.
3. Students will play a game in which they must accurately locate "their" baby bat using only their sense of smell.

Other Evidence:

1. Students will draw and write about bats in science journals.
2. Students will be able to locate migration patterns between Southern Texas and Mexico on a map.
3. Students will describe orally the time of year Mexican free-tailed bats migrate and the reasons why they migrate.

Day One: Assessing Background Knowledge

Materials: Chart paper, marker, book with facts about bats (see book list)

Time: 30 minutes

Lesson: Use chart paper to complete a K/W/L chart. Ask the students what they already know about bats. Accept all answers even if they are incorrect. Record answers on a large sheet of chart paper. Next, ask students what they would like to learn about bats. Be sure to include questions about hibernation and migration. Record these questions on a second sheet of chart paper. Post these charts someplace in the room as they will be used again at the end of the unit. Complete today's lesson by reading one of the books about bats. I like to read *Big Brown Bat* by Rick Chrustowski.

K/W/L Chart

What I Know	What I Want to Know	What I Learned

Day Two: What is a Bat?

Materials: *Bats!* by the Editors of TIME For Kids, chart paper, student's science journals

Time: 30 minutes

Lesson: Gather students into a large group. Tell students that we will be reading a non-fiction book about bats. Remind them to be listening for real facts about bats. Read the book. Ask kids to tell about what they just learned about bats, record answers on chart paper.

Facts from the book:

- Bats are nocturnal.
- Bats are mammals (they have fur and drink milk from their mothers).
- Bats are the only mammals that can fly.
- Baby bats are called pups.
- Pups learn to fly when they are only one month old.
- At a year old, a pup is all grown up.
- Bats live in homes called roosts.
- Bats live all over the world except where it is very cold.
- Some bats eat fruit and flowers, some eat meat, some drink blood, but most bats eat insects.
- Bats have a special sense called echolocation.
- Humans are the biggest threats to bats.
- Bats are helpful because they eat insects, pollinate flowers, and spread seeds.
- Texas is home to the most bats in the United States.

Activity: Have students return to their seats and draw a picture in their science journal of what a bat does in the daytime and what a bat does in the nighttime. Have them record this sentence: Bats are nocturnal. (Assess journals to verify understanding.)

Day Three: Amazing Bat Bodies!

Materials: several pictures of various species of bats, Bat Body worksheet (from: <http://www.enchantedlearning.com/subjects/mammals/bat/label/external/>)

Time: 30 minutes

Lesson: Show students pictures of lots of different bat species. Ask, "What do these bats have in common?" Explain that a bat's wings are thin sheets of skin that are stretched between their fingers. **Good Visual:** Have students stretch their hands out with their thumbs pointing up and fingers moving freely in all directions. A bat can move its fingers in much the same way so it can easily change its wing shape to turn, hover, and do flips.

Activity: Complete the Bat Body Worksheet. Insert it into science journal.



Day Four: Where do Bats Live?

Materials: World Map, Map of North America, Map of Southern USA and Mexico (from: <http://www.enchantedlearning.com/school/Mexico/Mapprintout.shtml>)

Time: 30 minutes

Lesson: Use the world map to discuss that bats live all over the world except in very cold areas. The background knowledge below will help you lead the discussion. Wrap up the discussion by reading *Batty about Texas* by J. Jaye Smith; illustrated by Kathy Coates. It is an illustrated discussion of the Mexican free-tailed bat, which lives all over Texas, particularly in Austin where the largest urban bat colony exists beneath a bridge, and covers how the bats contribute to tourism, fertilizer for farmers, and mosquito control in the region. Use the map of North America to help students find Austin, Texas and Mexico. Discuss how the bats migrate to Mexico as the weather turns cooler in the fall, around November, and return again in the spring, around May. Show pictures of bats in Austin and at a cave near Calakmul, Mexico.

Activity: Students will color a map of Southern USA and Mexico. Insert it into science journal.

Background Knowledge: Bats are found on every continent except Antarctica. There are over 950 species of bats. There are about 45 different species of bats living in the United States. Mexico is home to about 140 different species of bats. Most bats live in large groups called colonies. There can be thousands of bats in a colony. Bats generally live in caves, old mine tunnels, under rocky areas, tree hollows, under bridges, or in the walls and roofs of buildings. Bats that live in areas with cold winters will either hibernate or migrate to warmer temperatures. In Austin, Texas, a colony of Mexican free-tailed bats summers (they winter in Mexico) under the Congress Avenue Bridge ten blocks south of the state capitol. It is the largest urban colony in North America with an estimated 1,500,000 bats. Each night they eat millions of insects. When their food supply dwindles in the fall, they fly to warmer weather in Mexico where there is a greater supply of their favorite food: insects.

Pictures taken at Congress Avenue Bridge, Austin, Texas



Pictures taken at a cave near Calakmul Bio-Reserve, Campeche, Mexico



Day Five: Are You My Baby?

Materials: Book with facts about bat nurseries, cotton balls soaked in various scents (perfume, vanilla extract, liquid smoke, orange extract, cinnamon, etc.), blindfolds

Time: 30 minutes

Lesson: Read to students about bat nurseries. (See background knowledge below.) Divide the class into 4 groups. Spread the groups into separate locations throughout the classroom. Give each group member a different scented cotton ball. Choose one group to be the mothers. Blindfold the mothers and have them go to the first group of students. Each mom will have to identify their baby by the scent of their cotton balls. Check to see that all babies and mothers were matched up correctly. The first group of students then become the mothers and they will go to the second group and find their babies. Continue until all students have had a chance to be the mothers.

Student	Scent 1	Scent 2	Scent 3	Scent 4	Scent 5
1.	X				
2.		X			
3.			X		
4.				X	
5.					X
6.	X				
7.		X			
8.			X		
9.				X	
10.					X
11.	X				
12.		X			
13.			X		
14.				X	
15.					X
16.	X				
17.		X			
18.			X		
19.				X	
20.					X

Day Six: Preparation for Oral Report

Materials: Book with facts about bats, poster board, markers

Time: 45 minutes

Lesson: Divide students into small groups. Allow them time to prepare a poster that gives facts they learned about bats during this unit. Be sure to have lots of books available for them to use to hunt for additional facts. They will need to have an illustration of a bat on their poster identifying the major body parts.

Day Seven: Oral Report - Culminating Activity

Materials: Posters prepared by students on Day 6.

Time: 30 minutes

Lesson: Groups of students will give an oral report on bats while displaying the poster they made yesterday. Be sure to complete the KWL chart begun on Day 1.

	<i>1 Point</i>	<i>2 Points</i>	<i>3 Points</i>
<i>Poster - Content</i>	<i>Included 1-3 accurate facts about bats</i>	<i>Included 4-7 accurate facts about bats</i>	<i>Included 7 or more accurate facts about bats</i>
<i>Poster - Visual</i>	<i>Poster lacks important information or is visually sparse</i>	<i>Poster includes required information and is visually appealing</i>	<i>Poster includes more than the required information and is visually appealing</i>
<i>Oral Presentation</i>	<i>Presentation is unorganized and lacks the basic information about bats</i>	<i>Presentation is organized and has most of the basic information about bats</i>	<i>Presentation is organized and has all the basic information about bats</i>
<i>Group Participation</i>	<i>Group members did not work together and often argued or were off-task</i>	<i>Group members worked well together most of the time and were usually on task</i>	<i>Group members worked well together most of the time and were always on task</i>

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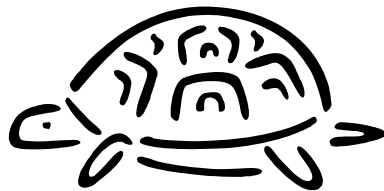
Bat Web sites:

Bat Conservation International: <http://www.batcon.org/>

Bat Facts and Amazing Trivia: <http://www.letsgetwild.net/docs/bats.pdf>

Migration Vacation in Mexico:
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Sea Turtles



Desired Results for Sea Turtles

Understandings: Students will understand what sea turtles look like, how sea turtles live, what they eat, and where they live. They will learn specifically about the seven species of sea turtles that live in the Caribbean.

Central Questions:

- ❖ Where do sea turtles live?
- ❖ What do sea turtles like to eat?
- ❖ What kind of animals are sea turtles?
- ❖ What is the life cycle of a sea turtle?
- ❖ What do different species of sea turtles look like?

Students will know:

- ❖ Sea turtles are reptiles.
- ❖ The leatherback turtle is the largest reptile in the world.
- ❖ Sea turtles have lived on earth for over 100 million years.
- ❖ Nesting females usually return to the beaches where they were born to lay their own eggs.
- ❖ There are seven species of sea turtles.
- ❖ Male sea turtles rarely return to land.
- ❖ Sea turtles can live to be 100 years old.
- ❖ Sea turtles are found in warm oceans around the world.
- ❖ Mother sea turtles can lay as many as 500 eggs in one season.
- ❖ Mother sea turtles usually return to the beaches where they were born to lay their eggs.

Students will be able to:

- ❖ Identify the main body parts of the sea turtle.
- ❖ Distinguish facts from opinions about sea turtles
- ❖ Recognize the physical characteristics of different sea turtle species.
- ❖ Role-play the chain of events between the time that the mother sea turtle comes ashore and lays her eggs to the time when the hatchlings return to the sea.

Assessment Evidence

Performance Tasks:

1. Students will give an oral report on sea turtles at the end of the unit.
2. Students will label the main body parts of a sea turtle.

Other Evidence:

1. Students will draw and write about sea turtles in science journals.
2. Students will be able to locate migration patterns between the northern Atlantic Ocean to the Gulf of Mexico on a map.
3. Students will describe orally the major threats to sea turtles and the conservation efforts that are underway in the U.S. and Mexico.

Day One: Assessing Background Knowledge

Materials: Chart paper, marker, book with facts about sea turtles (see book list)

Time: 30 minutes

Lesson: Use chart paper to complete a K/W/L chart. Ask the students what they already know about sea turtles. Accept all answers even if they are incorrect. Record answers on a large sheet of chart paper. Next, ask students what they would like to learn about sea turtles. Be sure to include questions about migration. Record these questions on a second sheet of chart paper. Post these charts someplace in the room as they will be used again at the end of the unit. Complete today's lesson by reading one of the books about sea turtles. I like to read *Into the Sea* by Brenda Z. Guiberson.

K/W/L Chart

What I Know	What I Want to Know	What I Learned

Day Two: Sea Turtles and Nesting

Materials: *The Life Cycle of a Sea Turtle* by Bobbie Kalman, large plastic container, sand, 100 ping pong balls, replica of a large sea turtle, journal, crayons, pictures of sea turtles

Time: 30 Minutes

Activity: Remind students of the book we read yesterday (*Into the Sea* by Brenda Z. Guiberson). Have them brainstorm some of the facts from the story. Reread the following paragraph:

"After more than twenty years in the sea, the turtle returns to the land. She waits until nighttime, when the tide is high, to come in. She is slow and awkward as she pulls her huge body up onto the sandy beach. She does not see well on land. Tears stream down her cheeks, as they do in the water, to help her body get rid of extra salt from the sea. She pokes her nose into the sand. The turtle seems to know that she has come back to the same island where she was born."

Simulation Day 1: After a discussion about sea turtles returning twenty years later to the same beach where they were born to lay their eggs, begin the simulation. Bring out a large plastic storage container (about 2' by 3'). Pour in sand until the container is half full. Now, dim the lights to simulate night time. Wait patiently for a mother sea turtle to appear. (I use a large plastic sea turtle but a stuffed animal would work well too.) Place her on top of the sand. Read p. 12-13 of *The Life Cycle of a Sea Turtle* by Bobbie Kalman. It describes the nesting process in a way that is easy enough for first graders to understand. Dig a large hole in the sand then pour in 100 ping pong balls. Read p. 14 of the same book. It is about how the mother sea turtle leaves her eggs and returns to the sea. Cover the eggs (ping pong balls) with sand using the mother sea turtle to act it out. Explain to the kids that the mother now swims out to sea knowing that her babies will instinctively know what to do when they hatch in 45-70 days. Cover the container from student's view.

Activity: Color a picture of a sea turtle and journal about the nesting process. Use the following vocabulary words: egg chamber, nesting, and clutch. See glossary for definitions.

Day Three: Types of Sea Turtles

Materials: pictures and information about sea turtles, map of the Caribbean, butcher paper, yard stick, marker

Time: 30 minutes

Activity: Begin with a discussion about reptiles. Facts about reptiles:

- All reptiles have scales and a backbone, and they breathe with lungs.
- They are cold-blooded animals.
- All reptiles reproduce by laying eggs.
- Some reptiles live on land, and others live in water.
- There are four main groups of reptiles.
 1. alligators and crocodiles
 2. tortoises, turtles, and sea turtles
 3. tuataras
 4. lizards and snakes

Although there are over 260 species of turtles, there are only seven species of sea turtles. Show students a picture of each species and talk about their physical differences. You can use many of the books listed in the bibliography or find information on the Web. Try <http://www.cccturtle.org> for some great facts. Explain that sea turtles are found all over the world but we are going to focus on the six species that live in the Caribbean. Those species are: Leatherback, Green turtle, Loggerhead, Hawksbill, Kemp's Ridley, and Olive Ridley.

Simulation Day 2: Check the progress of the nesting area but do not disturb the eggs. Nothing will be happening.

Activity: Put a white piece of butcher paper up the length of your wall. It will need to be at least 7 feet high. Mark off 7 feet divided into 6" increments. Now record the average height of each of the sea turtle species. Leatherback - 74", Green turtle - 49", Loggerhead - 47", Hawksbill - 35", Kemp's Ridley - 30", and Olive Ridley - 30". Now let students stand next to the chart and see how they measure up.

Day Four: Sea Turtle Migration

Materials: *Turtles' Way: Loggy, Greeny & Leather* by Mara Uman Hixon, map of the Atlantic Ocean, Caribbean, and Gulf of Mexico, mesh cloth or screening material, wooden posts

Time: 30 minutes

Background Information: Sea turtles that nest in the southeast U.S. travel all over the Atlantic, the Gulf of Mexico, and the Caribbean. It is important that we protect the sea turtle, so all countries in this area must work together. All species of sea turtles are endangered and citizens must be educated in conservation efforts.

Activity: Read *Turtles' Way: Loggy, Greeny & Leather* by Mara Uman Hixon. Record new facts that the students learned about sea turtles. Put up a map of the Atlantic Ocean, Caribbean, and Gulf of Mexico. Explain to the students that little is really known about the mysterious journey of sea turtles as they travel throughout the ocean. Most research has been focused on nesting females and hatchlings emerging from the nest, largely because they are the easiest to find and study. In recent years thousands of sea turtles have been tagged to help collect information about their growth rates, reproductive cycles, and migration routes.

Simulation Day 3: Before the students uncover the container to check on the nest, disturb the nest by throwing several eggs out of the nest and removing about twenty of the eggs. Reveal the nest and allow students to discover the problem. Lead a group discussion asking them what they think could have happened. Remind them that we are simulating a nest site on a beach in Mexico. In the end, explain that ghost crabs found the nest and carried many of the eggs away to feed on them. Cover the remaining eggs back up and put a mesh cloth cage around it.

Day Five: Conservation

Materials: poster board, markers

Time: 30 minutes

Activity: Today we are going to make posters to educate people on the threats to sea turtles and what we can do to assure their survival. Give the students information about things humans can do to increase the sea turtle population. Create a poster to be hung in our school's media center.

Threats:

- Sea turtles are killed for their meat.
- Eggs are dug up by humans for food.
- Turtle shells are used for jewelry.
- Sea turtle oil is used in cosmetics.
- Habitat is destroyed with buildings.
- Shore lights confuse hatchlings causing them to crawl away from the ocean and toward busy highways.
- Sea turtles get caught in the lines and nets of fishing boats.
- They are hit by speedboats.
- They get tangled up in ocean pollution.

Simulation Day 4: Check the progress of the nesting area but do not disturb the remaining eggs. Nothing will be happening.



Stop Building on Nesting Beaches!

Day Six: Life Cycle

Materials: *Watch Me Grow: Turtle* by DK, journals, 70 replicas of sea turtle hatchlings (if you do not have access to replicas, you can laminate pictures of about 70 sea turtles of the same species)

Time: 30 minutes

Activity: Read *Watch Me Grow: Turtle* by DK. You might want to skip p. 6-7 if you don't want to explain the mating process to a bunch of young children. Discuss some of the new facts they learned about sea turtles from the book. Have the students record interesting facts in their journals.

Some facts from book:

- The turtles use a tiny hard tooth, called an egg tooth, to help them break open their shell.
- Sea turtle eggs hatch after about 60 days.
- The baby sea turtles are about 2 inches long.
- If the temperature in the nest is hot, all the hatchlings will be girls. If it is cooler, they will all be boys.
- Adult sea turtles can stay under water for up to five hours before taking a breath of air.
- Sea turtles can live to be more than 80 years old.
- Instead of a hard shell, the Leatherback has a thick skin that is supported by bones.

Simulation Day 5: In advance, open up the nest and pull out the majority of the eggs (ping pong balls). Place hatchling replicas emerging out of the sand and crawling around in the sand then recover the container. As students gather around, they will discover the hatchlings. Have them predict how many they think will actually make it to the ocean. Point out to students that it is important not to touch the turtles unless they are in danger. Some scientists believe that the process of finding their way into the ocean will help the sea turtle "remember" how to return to lay its own eggs on the same beach. Cover the container.

Day Seven: Threats to Hatchlings and Baby Sea Turtles

Materials: *The Life Cycle of a Sea Turtle* by Bobbie Kalman, drawing paper, crayons or markers, 10 baby sea turtle replicas

Time: 30 minutes

Activity: Read p. 15-23 of *The Life Cycle of a Sea Turtle* by Bobbie Kalman. It discusses the threats to young sea turtles. Have students draw pictures explaining those threats. Divide a piece of white construction paper into fourths. Draw a picture of four different situations that could affect the life of sea turtles.

Threats:

- Eggs could be eaten by predators such as raccoons, wild dogs, pigs, ghost crabs, sea birds, and several types of insects.
- Human threats as discussed on Day 5.
- Hatchlings face the same chance of being eaten by the land predators mentioned above.
- Once the hatchling reaches the ocean, it becomes vulnerable to hungry sharks and other predatory fish.

Simulation Day 6: Before the students arrive, remove the sand and all eggs and hatchlings from the container. Fill the container a few inches with water. Put about 10 of the hatchlings in the water. If seaweed or other water plants are available, put those in there. You can also use long blades of grass to simulate seaweed. Recover the container. When students come to check on the hatchlings today, they will discover that only 10 of them actually made it to the ocean. Discuss the pictures they drew today to help them discover some of the reasons the sea turtles did not make it. In reality, it is believed that only one out of 1,000 sea turtles will make it to adulthood.

Day Eight: Reporting on the Sea Turtle

Materials: Books on sea turtles, butcher paper, notes

Time: 60 minutes

Activity: Students will work in groups of 3-4 students. They will review their notes and books on sea turtles to complete a report on sea turtles. Give them about 30 minutes to draw and record facts that they have learned during this unit. Have groups give an oral report of what they learned. Be sure to complete the KWL chart began on Day 1.

Extension Activities: In April, National Geographic will sponsor The Great Turtle Race. Check out their Web site at: <http://www.greatturtlerace.com/> In 2009, they monitored and tracked eleven leatherback sea turtles speeding from foraging grounds in the frigid waters of Canada to nesting beaches on the sun-soaked shores of the Caribbean. The turtles were tagged with state-of-the-art satellite tracking devices that allowed them to follow this incredible 3,700-mile (6,000-kilometer) journey. Have each student choose which turtle they think will win then monitor their progress each day. This is an excellent graphing activity.

Support a conservation center and adopt a sea turtle. You can find sea turtles to adopt at the following Web sites:

<http://www.seaturtle.org/adopt/>

<http://www.cccturtle.org/support.php>

<http://savetheseaturtle.org/>

Glossary

clutch: A group of eggs that hatches together.

egg chamber: A nest made for the sea turtle to lay her eggs.

nesting: Making a nest and laying eggs is called nesting.

Pictures of a Sea Turtle Conservation Center

Xpicab's Fish Farm and Turtle Conservation Camp
Calakmul, Campeche, Mexico



Sea turtle eggs that were laid on this beach in Mexico have been transferred by volunteers to these protected nests. Sea turtles will emerge about 60 days after the eggs were laid depending on the outside temperature.



Baby sea turtles that have hatched out in captivity.



These sea turtles are cared for until they are ready to be released back into the ocean. Hopefully they will reach adulthood and return to this same beach in about 18 years to lay their own eggs.



This sea turtle has reached a size that will increase its odds of making it to adulthood.



Children from a nearby school were invited to come and watch the release.



Saying goodbye to the sea turtle. It is good luck to have everyone circle around and say goodbye. After the turtle was released, he swam straight towards the open ocean.



Conservation centers like this one help ensure that more people in Mexico become aware of the sea turtle's needs in order to keep them from becoming extinct.

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Monarch Butterflies



Desired Results for Monarchs

Understandings: Students will understand what monarch butterflies look like, how they live, what they eat, and where they live. They will learn specifically about migration patterns between the U.S. and Mexico.

Central Questions:

- ❖ Where do monarchs live?
- ❖ What do monarchs like to eat?
- ❖ What is the life cycle of a monarch?



Students will know:

- ❖ Monarchs are insects.
- ❖ Monarchs eat milkweed.
- ❖ Monarchs can fly 80 miles in a day.
- ❖ A monarch's life cycle has four main stages.
- ❖ Monarchs migrate to warm places in Mexico during the winter.

Students will be able to:

- ❖ Tell about the habitat of the monarch.
- ❖ Identify the main body parts of the monarch.
- ❖ Describe the life cycle of the monarch.

Assessment Evidence

Performance Tasks:

1. Students will give an oral report on monarchs at the end of the unit.
2. Students will label the main body parts of a monarch.
3. Students will observe and learn more about monarchs by raising them in the classroom.

Other Evidence:

1. Students will draw and write about monarchs in science journals.
2. Students will be able to locate monarch migration patterns between the U.S. and Mexico on a map.

Day One: Assessing Background Knowledge

Materials: Chart paper, marker, book with facts about monarch butterflies (see book list)

Time: 30 minutes

Lesson: Use chart paper to complete a K/W/L chart. Ask the students what they already know about monarch butterflies. Accept all answers even if they are incorrect. Record answers on a large sheet of chart paper. Next, ask students what they would like to learn about monarch butterflies. Be sure to include questions about migration. Record these questions on a second sheet of chart paper. Post these charts someplace in the room as they will be used again at the end of the unit. Complete today's lesson by reading one of the books about monarchs. I like to read *Monarch! Come Play with Me* by Ba Rea.

K/W/L Chart

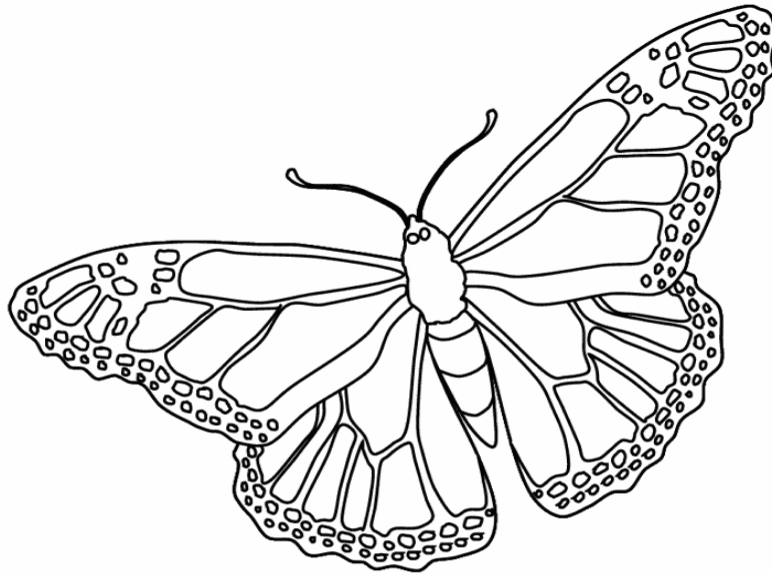
What I Know	What I Want to Know	What I Learned

Day Two: What Do Monarch Butterflies Look Like?

Materials: pictures of monarchs, coloring page of a monarch, crayons

Time: 30 minutes

Lesson: Show students pictures of monarchs. Discuss the coloring, number of wings, and other characteristics. Print off a monarch coloring page from a Web site such as <http://www.thebutterflysite.com/21-butterfly-coloring-pages.html> or http://www.kidzone.ws/animals/monarch_color.htm Color and hang up in the classroom for the remainder of the unit.



Monarch Butterfly

Day Three: Life Cycle of a Monarch Butterfly

Materials: *The Life Cycle of a Butterfly* by Bobbie Kalman

Time: 30 minutes

Lesson: Read *The Life Cycle of a Butterfly* by Bobbie Kalman. Be sure that students understand that an animal's life cycle is made up of the stages in its life from the time it is born to the time it becomes an adult that can make babies. Have students write about the life cycle in their journals.

Monarch life cycle:

- The first stage in the life cycle is the egg.
- The larva hatches from the egg. It is called a caterpillar.
- The caterpillar makes a case around itself. The insect is now a pupa.
- When the chrysalis, or case, looks clear, the pupa has become a butterfly.
- The adult butterfly comes out of the case and is ready to fly.
- When an adult female lays her eggs, the life cycle begins again.

Activity: Have students work in small groups to discuss what they learned from the book we read today. Each group will report on three new facts they learned about monarch butterflies.

Extended Lesson: Raise monarchs in the classroom. This is an excellent way for students to see the life cycle of a monarch. It is best done in spring or fall when the monarchs are migrating through your state. You can harvest your own caterpillars from milkweed if it grows freely in an area near your school or home. If not, you can purchase caterpillars from Monarch Watch. You can find more information on the Monarch Watch Web site: <http://www.monarchwatch.org/>

Web sites you can look at to see the life cycle:

<http://www.kidzone.ws/animals/monarchlifecycle.htm>

<http://www.monarchbutterflyusa.com/Cycle.htm>

<http://www.thebutterflysite.com/life-cycle.shtml>

Day Four: Migration

Materials: Monarch Migration Map of North America, *Monarch Butterflies*, *Mysterious Flyers* by Bianca Lavies, *Monarch and Milkweed* by Helen Frost.

Time: 30 minutes

Background Knowledge: Unlike most other insects in temperate climates, monarch butterflies cannot survive a long cold winter. Monarchs west of the Rocky Mountains travel to small groves of trees along the California coast. Those east of the Rocky Mountains fly farther south to the forests high in the mountains of Mexico. The monarch's migration is driven by seasonal changes in their environment, such as day length and temperature. They travel much farther than all other tropical butterflies, up to 3,000 miles. They are the only butterflies to make such a long, two-way migration every year. Amazingly, they fly in masses to the same winter roosts, often to the exact same trees. This is a mystery because the butterflies returning to Mexico or California each fall are the great-great-grandchildren of the butterflies that left the previous spring.

Lesson: Read *Monarch and Milkweed* by Helen Frost. Look at the migration pattern at the end of the book. You can also see the migration pattern at <http://www.learner.org/jnorth/tm/monarch/MapsFallAbout.html> Look at the map at <http://www.learner.org/jnorth/tm/monarch/FallMigrationTiming.html> to see when to expect to see the monarchs migrating south for the winter in your state.

Show students pictures of monarch wintering sites in Mexico from the book, *Monarch Butterflies*, *Mysterious Flyers* by Bianca Lavies. You will be able to see another actual wintering site in Mexico at <http://www.learner.org/jnorth/tm/monarch/GallerySanctuary.html> This site contains excellent photographs.

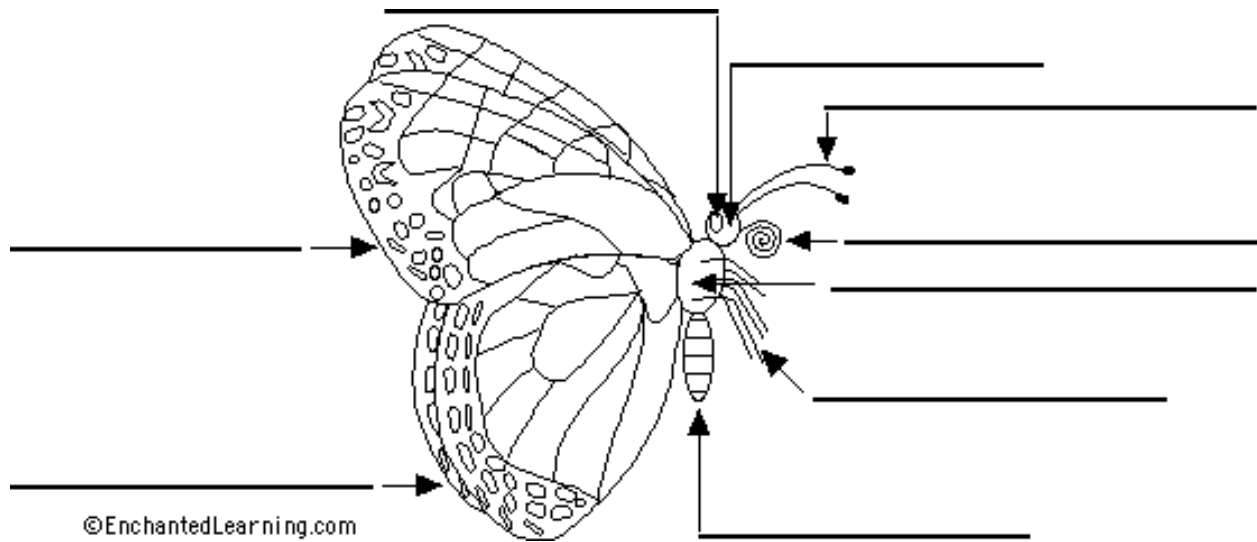
Day Five: Monarch Butterflies Up Close

Materials: *Monarch Butterflies Up Close* by Carmen Bredeson, worksheet of the anatomy of a monarch (attached below and also available from:

<http://www.enchantedlearning.com/subjects/insects/label/butterfly.shtml>)

Time: 30 minutes

Lesson: Read *Monarch Butterflies Up Close* by Carmen Bredeson. Pass out the worksheet of the monarch's anatomy. Help students complete the worksheet.



Definitions

Abdomen - The abdomen is the segmented tail area of an insect that contains the heart, Malpighian tubules, reproductive organs, and most of the digestive system.

Antenna - An antenna is a sensory appendage that is attached to the head of adult insects. Antennae are used for the sense of smell and balance. Butterflies have two antennae with clubs at the end.

Compound Eye - Insect compound eyes are made up of many hexagonal lenses.

Fore wing - The fore wings are the two upper wings.

Head - The head is the part of the insect that contains the brain, two compound eyes, the proboscis, and the pharynx (the start of the digestive system). The two antennae are attached to the head.

Hind wing - The hind wings are the two lower wings.

Leg - All adult butterflies have six legs. The two forelegs of some butterfly species are tiny.

Proboscis - Adult butterflies sip nectar and other liquids using a spiral, straw-like proboscis located on their head.

Thorax - The thorax is the body section between the head and the abdomen. The legs and wings attach to the thorax.

Day Six: Preparation for Oral Report

Materials: Books with facts about monarch butterflies, poster board, markers

Time: 45 minutes

Lesson: Divide students into small groups. Allow them time to prepare a poster that give facts they learned about monarchs during this unit. Be sure to have lots of books available for them to use to hunt for additional facts. They will need to have an illustration of a monarch on their poster identifying the major body parts.

Day Seven: Oral Report - Culminating Activity

Materials: Posters prepared by students on Day 6

Time: 30 minutes

Lesson: Groups of students will give an oral report on monarch butterflies while displaying the poster they made yesterday. Be sure to complete the KWL chart begun on Day 1.

	<i>1 Point</i>	<i>2 Points</i>	<i>3 Points</i>
<i>Poster - Content</i>	<i>Included 1-3 accurate facts about monarchs</i>	<i>Included 4-7 accurate facts about monarchs</i>	<i>Included 7 or more accurate facts about monarchs</i>
<i>Poster - Visual</i>	<i>Poster lacks important information or is visually sparse</i>	<i>Poster includes required information and is visually appealing</i>	<i>Poster includes more than the required information and is visually appealing</i>
<i>Oral Presentation</i>	<i>Presentation is unorganized and lacks the basic information about monarchs</i>	<i>Presentation is organized and has most of the basic information about monarchs</i>	<i>Presentation is organized and has all the basic information about monarchs</i>
<i>Group Participation</i>	<i>Group members did not work together and often argued or were off-task</i>	<i>Group members worked well together most of the time and were usually on task</i>	<i>Group members worked well together most of the time and were always on task</i>

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