

A Walk through Time in Georgia GPS Correlations

Fernbank Museum's signature exhibition, *A Walk through Time in Georgia*, is an immersive experience using lifelike re-creations, specimens and multimedia to explore the natural history of Georgia—its modern geographic regions and its past environments. This exhibition is a perfect complement to both science and social studies, with plenty of opportunities to integrate math and language arts activities along the way.

Relevant GPS correlations, with suggested tasks, are listed below. In order to get the maximum benefit from the exhibition, please download the gallery guide and appropriate scavenger hunts from our Web site: www.fernbankmuseum.org/education/online-resources.aspx

We encourage you to visit all of the Museum's exhibitions during your field trip! Download Fernbank's Field Trip Resource Guide for information you need to plan your visit. If we can be of any assistance, please contact us at justforeducators@fernbank.edu.

Kindergarten

Science

SKCS5. Students will communicate scientific ideas and activities clearly.

- a. Describe and compare things in terms of number, shape, texture, size, weight, color and motion.
 - Study the different animals that reside in Georgia. How many bats are there in the Appalachian Plateau? Have the students move like a bat. In *The Ruling Dinosaurs* gallery, have students move like a large dinosaur. Which animal is bigger—the dinosaur or the bat? Have students pick three dinosaurs and list their names in order by size, smallest to largest.
- b. Begin to draw pictures that portray features of the thing being described.
 - When you get back to your classroom, have students draw a picture of their favorite animal from the exhibition. How many legs does it have? What is it covered with (feathers, fur, scales, etc.)? How big was the animal?

SKCS6. Students will understand the important features of the process of scientific inquiry.

Students will apply the following to inquiry learning practices:

- a. In doing science, it is often helpful to work with a team and to share findings with others.
 - Download a scavenger hunt before your field trip. Have students get into groups and help each other complete the scavenger hunt.

SKE2. Students will describe the physical attributes of rocks and soils.

- a. Use senses to observe and group rocks by physical attributes such as large/small, heavy/light, smooth/rough, dark/light, etc.
 - If there is a Museum Volunteer at the entrance of the exhibition, have him or her show you the rock samples. Compare the different rocks and fossils. Look at the shape and size, and feel the texture and weight of the different rocks.
- c. Recognize earth materials—soil, rocks, water, air, etc.
 - As you walk through the regions of Georgia, search the areas for non-living components (soil, rocks, water, etc.).

SKL1. Students will sort living organisms and non-living materials into groups by observable physical attributes.

- a. Recognize the difference between living organisms and non-living materials.
 - While you are searching the regions for non-living components of the Earth, also look for living organisms and explain how you know that they are alive. Do deer breathe? Do trees grow? Have students point out three living and three non-living things.
- b. Group animals according to their observable features such as appearance, size, motion, where it lives, etc. (Example: A green frog has four legs and hops. A rabbit also hops.)
 - Search for animal themes between different regions. Have students look for the smallest animal they can find in each room. Have students look for animals that fly and animals that swim. Challenge students to find animals in their homes, hiding in trees or underground.
- c. Group plants according to their observable features such as appearance, size, etc.
 - Observe the various vegetation in the regions. Notice how the trees in the Piedmont are different from the grasses in the Coastal Plain. Which plants are taller? How do the leaf shapes differ? How are they alike?

Social Studies

SSKH3. The student will correctly use words and phrases related to chronology and time to explain how things change.

- a. Now, long ago
- b. Before, after
- g. Past, present, future
 - Between regions, side galleries show life as it unfolded in the state of Georgia. Study the galleries *Life Develops in the Ancient Seas*, *Life Adapts to Land*, *The Ruling Dinosaurs* and *The Rise of Birds and Mammals*. Explain to the students that all of the life in the aforementioned galleries was in the past and that the life represented in the other galleries all presently live in Georgia.

First Grade

Science

S1CS5. Students will communicate scientific ideas and activities clearly.

- a. Describe and compare things in terms of number, shape, texture, size, weight, color and motion.
 - Study the different animals that reside in Georgia. How many bats are there in the Appalachian Plateau? Have students move like a bat. In *The Ruling Dinosaurs* gallery, have the students move like a large dinosaur. Which animal is bigger, the dinosaur or the bat? Have students pick three dinosaurs from the dinosaur gallery and list their names in order by size, smallest to largest.
- b. Draw pictures (grade level appropriate) that correctly portray features of the thing being described.
 - When you get back to your classroom, have students draw a picture of their favorite animal from the exhibition. How many legs does it have? What is it covered with (feathers, fur, scales, etc.)? How big was the animal?

S1CS7. Students will understand important features of the process of scientific inquiry.

Students will apply the following to inquiry learning practices:

- a. Scientists use a common language with precise definitions of terms to make it easier to communicate their observations to each other.
 - Notice the displays located outside the exhibition. Information panels on the displays provide additional information on some of the animals that can be found in our state. Reference that these plants and animals all have common names; but what we call a squirrel is referred to by different names in other parts of the world. However, each plant and animal has a scientific name (listed on

the displays in parenthesis) which is universal and allows scientists from all over the globe to share their data with each other.

- b. In doing science, it is often helpful to work as a team. All team members should reach individual conclusions and share their understandings with other members of the team in order to develop a consensus.
 - Download a scavenger hunt before your field trip. Have the students get into groups and help each other complete the scavenger hunt.

S1L1. Students will investigate the characteristics and basic needs of plants and animals.

- a. Identify the basic needs of a plant.
 1. Air
 2. Water
 3. Light
 4. Nutrients
 - Review the basic needs of plants before your field trip. As you explore the exhibition, notice the flowers, trees and other plants in the various regions. They have plenty of air and light. How would they get their water? Nutrients? If they were real, they would need all these things. Take your group outside to the Terrace located off the Great Hall to get a view of the surrounding forest. Determine where each of these trees' basic needs come from (air-open space, water-rain/ground water, light-sun, nutrients-in the soil).
- b. Identify the basic needs of an animal.
 1. Air
 2. Water
 3. Food
 4. Shelter
 - Review the basic needs of animals before your field trip. How do needs vary from animal to animal? Do all animals need the same food or the same shelter? While the students are going through the exhibition, have them find two sources of water for animals. Next, have them pick out a food item and two animals that would eat this food. Lastly, find two things that could be considered animal homes. Can you find an animal in one?
 - In connection with **S1CS5b**, when you return to your school and have students draw pictures of their favorite animals, have them draw in a suitable habitat as well. This could include water, shelter, rocks, trees, food, etc.
- c. Identify the parts of a plant—root, stem, leaf, and flower.
 - Take a look at the displays located outside the exhibition. Are there any plants in the displays? Can you find the different parts of the plants? When you get back to your classroom, sing “Head, Shoulders, Knees and Toes” with the parts of a plant (“flowers, leaves, stem and roots”).
- d. Compare and describe various animals—appearance, motion, growth, basic needs.
 - As you go through the exhibition find 3 different animal coverings (fur, scales, feather, etc.) and 3 different means of movement (swim, walk, fly, etc.). In the Okefenokee Swamp, find a baby alligator and a full grown alligator and compare the sizes.

Social Studies

SS1G3 The student will locate major topographical features of the earth’s surface.

- b. Locate the major oceans: Arctic, Atlantic, Pacific and Indian.
 - At the end of the exhibition there is an ocean diorama. Which ocean is this?
- c. Identify and describe landforms (mountains, deserts, valleys, plains, plateaus and coasts).

- As you walk from the mountains to the plains to the coast in this exhibition, have the students explain how they know what type of landform they are viewing. What makes a mountain unique? How is the coast special?

Second Grade

Science

S2CS5. Students will communicate scientific ideas and activities clearly.

- Describe and compare things in terms of number, shape, texture, size, weight, color and motion.
 - Study the different animals that reside in Georgia. How many bats are there in the Appalachian Plateau? How do they move? How does this compare to a dinosaur's movement? What about the sizes of the dinosaurs? Have students pick four dinosaurs from *The Ruling Dinosaurs* gallery and list their names in order by size, smallest to largest.
- Draw pictures (grade level appropriate) that correctly portray features of the thing being described.
 - When you get back to your classroom, have students draw a picture of their favorite animal from the exhibition. How many legs does it have? What is it covered with (feathers, fur, scales, etc.)? How big was the animal?

S2L1. Students will investigate the life cycles of different living organisms.

- Relate seasonal changes to observations of how a tree changes throughout a school year.
 - Looking at the trees and the murals, have the students figure out what season is represented in each of the regions. How can they tell? Note the leaves on the trees as you leave Fernbank Museum; do they match the season?

Social Studies

SS2H2 The student will describe the Georgia Creek and Cherokee cultures of the past in terms of tools, clothing, homes, ways of making a living and accomplishments.

- Describe the regions in Georgia where the Creeks and Cherokees lived and how the people used their local resources.
 - Before your field trip, review where the Creeks and the Cherokees lived in Georgia with your students. At the Museum, look for the correct regions in the exhibition and pay close attention to trees in each region. How would Native Americans have used these trees? Can you find animals in the regions they may have eaten?

SS2G1 The student will locate major topographical features of Georgia and will describe how these features define Georgia's surface.

- Locate all the geographic regions of Georgia: Blue Ridge Mountains, Piedmont, Coastal Plain, Valley and Ridge and Appalachian Plateau.
 - Have students properly identify each of the regions as they walk through them. They should be able to name two characteristics of each particular region. In your classroom, give students a map of Georgia and see if they can place the different regions on the map.

Third Grade

Science

S3CS5 Students will communicate scientific ideas and activities clearly.

- Locate scientific information in reference books, back issues of newspapers and magazines, CD-ROMs and computer databases.
 - Use the variety of text panels, field guides and videos to learn about the exhibition.

S3E2 Students will investigate fossils as evidence of organisms that lived long ago.

- a. Investigate fossils by observing authentic fossils or models of fossils or view information resources about fossils as evidence of organisms that lived long ago.
 - Models of fossils and authentic fossils are found in several galleries of the exhibition, including *Life Develops in the Ancient Seas*, *Life Adapts to Land*, *The Ruling Dinosaurs* and *The Rise of Birds and Mammals*.
 - If a Museum Volunteer is available, see actual fossils at the Orientation Desk.
 - Investigate fossils embedded in the limestone floor tiles just outside the exhibition.
- b. Describe how a fossil is formed.
 - Fossil formation is explained in *Life Develops in the Ancient Seas* gallery inside the exhibition.

S3L1 Students will investigate the habitats of different organisms and the dependence of organisms on their habitat.

- c. Identify features of animals that allow them to live and thrive in different regions of Georgia.
 - Study the features of the mammals, birds, reptiles, amphibians and fish displayed in the dioramas. Compare similarities and differences between animals found in different regions.
- d. Explain what will happen to an organism if the habitat is changed.
 - Consider if certain animals found only in one region could adapt to live in other regions. For example, could a Coastal Plain animal live in the Appalachian Mountains? Why or why not?

Social Studies

SS3G1 The student will locate major topographical features of the United States of America.

- b. Identify major mountain ranges of the United States of America: Appalachian, Rocky.
 - Study the Appalachian Mountain diorama.

Fourth Grade

Science

S4L1 Students will describe the roles of organisms and the flow of energy within an ecosystem.

- c. Predict how changes in the environment would affect a community (ecosystem) of organisms.
- d. Predict effects on a population if some of the plants or animals in the community are scarce or if there are too many.
 - Study the relationships between the plants and animals displayed in each diorama and make predictions about what would happen if changes occurred in their environment.

S4L2 Students will identify factors that affect the survival or extinction of organisms such as adaptation, variation of behaviors (hibernation) and external features (camouflage and protection).

- a. Identify external features of organisms that allow them to survive or reproduce better than organisms that do not have these features (for example: camouflage, use of hibernation, protection, etc.).
 - Study the adaptations of the animals displayed in the exhibition dioramas. Consider how these external features and behaviors aid in their survival.
- b. Identify factors that may have led to the extinction of some organisms.
 - Consider theories about what led to the extinction of some animals inside the exhibition's galleries *Life Develops in the Ancient Seas*, *Life Adapts to Land*, *The Ruling Dinosaurs* and *The Rise of Birds and Mammals*. Do any of these animals or animals of similar form still exist today?

Social Studies

SS4G1 The student will be able to locate important physical and man-made features in the United States.

- a. Locate major physical features of the United States: the Atlantic Coastal Plain, Great Plains, Continental Divide, the Great Basin, Death Valley, Gulf of Mexico, St. Lawrence River and the Great Lakes.
 - See what the Atlantic Coastal Plain looks like in Georgia by studying these dioramas in the exhibition: the Coastal Plain, the Okefenokee Swamp and the Coast and Barrier Islands.

Fifth Grade

Science

S5CS5 Students will communicate scientific ideas and activities clearly.

- d. Locate scientific information in reference books, back issues of newspapers and magazines, CD-ROMs and computer databases.
 - Use the variety of text panels, field guides and videos to learn about the exhibition.

S5E1 Students will identify surface features of the Earth caused by constructive and destructive processes.

- a. Identify surface features caused by constructive processes.
- b. Identify and find examples of surface features caused by destructive processes.
 - In the exhibition, find examples of Georgia landforms caused by constructive and destructive processes including mountains, canyons, barrier islands and more.

S5L1 Students will classify organisms into groups and relate how they determined the groups with how and why scientists use classification.

- a. Demonstrate how animals are sorted into groups (vertebrate and invertebrate) and how vertebrates are sorted into groups (fish, amphibian, reptile, bird and mammal).
 - Make lists of the invertebrate and vertebrate animals displayed in each diorama. Then sort the vertebrate animals into their five main groups.

Social Studies

SS5G1 The student will locate important places in the United States.

- a. Locate important physical features: the Grand Canyon, Salton Sea, Great Salt Lake and the Mojave Desert.
 - In the exhibition, find out more about important physical features of Georgia, including the Okefenokee Swamp (National Wildlife Refuge) and Gray's Reef (National Marine Sanctuary), the Fall Line and more.

Sixth Grade

Science

S6CS8. Students will investigate the characteristics of scientific knowledge and how it is achieved.

- c. As prevailing theories are challenged by new information, scientific knowledge may change and grow.
 - Find *Compsognathus* in *The Ruling Dinosaurs* gallery. This dinosaur, once thought to be covered only in scales, is now thought to have had feathers based on new fossil evidence. Pick two more dinosaurs and come up with a hypothesis about a "known fact" for each one. Back your hypotheses with explanations. For example, do you think *T. rex* really was a carnivore? Why or why not? Do you think that dinosaurs like the *Stegosaurus* held their tails upright or dragged them on the ground? Why or why not?

S6E1. Students will explore current scientific views of the universe and how those views evolved.

- a. Relate the Nature of Science to the progression of basic historical scientific models (geocentric, heliocentric) as they describe our solar system and the Big Bang as it describes the formation of the universe.
 - Watch the video at the beginning of the exhibition. List two facts that the video gives to support the Big Bang theory. Does this theory explain how our solar system looks the way it does? Support your answer.

S6E5. Students will investigate the scientific view of how the Earth's surface is formed.

- c. Classify rocks by their process of formation.
 - While walking through the Appalachian Mountain region, take a look at the mountain rock. Is this rock igneous, sedimentary, or metamorphic? What clue(s) did you find to draw your conclusion?
- d. Describe processes that change rocks and the surface of the earth.
 - The Cumberland Plateau region in Georgia has more than 300 caves. As you walk past the mountain area and through the cave, think about two geological processes that could have contributed to the formation of such a cave.
- f. Explain the effects of physical processes (plate tectonics, erosion, deposition, volcanic eruption, gravity) on geological features including oceans (composition, currents and tides).
 - Take a look at the beach at the end of the exhibition. Do you think Georgia's coast looks exactly the same as it looked 100 million years ago? Why or why not? What geological processes are helping to sculpt the beach?
- g. Describe how fossils show evidence of the changing surface and climate of the Earth.
 - Fossils from animals shown in the *Life Develops in the Ancient Seas* gallery (ex: trilobites, ammonites, horn coral) have been found in the Ridge and Valley region in north Georgia. Why do you think marine (ocean) fossils are found in the mountains? What process or processes do you think could be responsible?
- i. Explain the effects of human activity on the erosion of the earth's surface.
 - Think about the processes that help to sculpt the beach at the end of the exhibition. List three things that people do that speed up the erosion process. List three things that people can do to help slow down the effects of erosion on the coast.

Seventh Grade

Science

S7CS5. Students will use the ideas of system, model, change and scale in exploring scientific and technological matters.

- a. Observe and explain how parts can be related to other parts in a system such as predator/prey relationships in a community/ecosystem.
 - What is the difference between a predator and a prey animal? In the Okefenokee Swamp diorama find three animals that would be considered predators. For each predator, find two animals that would be considered its prey. Could the same animal be both a predator and prey?

S7L1. Students will investigate the diversity of living organisms and how they can be compared scientifically.

- a. Demonstrate the process for the development of a dichotomous key.
 - Pick five animals from the Coastal Plain region and make a "yes/no" dichotomous key. For example, does the animal have feathers, fur, teeth, claws, etc.?

S7L3. Students will recognize how biological traits are passed on to successive generations.

- b. Compare and contrast organisms that reproduce asexually and sexually (bacteria, protists, fungi, plants and animals).
 - While looking at Grey's Reef, pick out three animals that you think might reproduce asexually. What made you choose those particular animals? Look up the animals when you get back to your classroom to see if you were correct.
- c. Recognize that selective breeding can produce plants or animals with desired traits.
 - Look at the turkeys in the Piedmont region. Very often the females of a species will choose who to mate with based on a particular trait. With turkeys, the females select their mate based on the size and showiness of the male's tail. Which male in this scene do you think the females would select? What does this mean in terms of passing on genes and the tail characteristics of the offspring?

S7L4. Students will examine the dependence of organisms on one another and their environments.

- a. Demonstrate in a food web that matter is transferred from one organism to another and can recycle between organisms and their environments.
 - Draw a food chain with five plants/animals from the Okefenokee Swamp. What is at the bottom of your food chain? What is at the top? How do the nutrients at the top make their way back down to the bottom of the food chain?
- c. Recognize that changes in environmental conditions can affect the survival of both individuals and entire species.
 - How would your food chain be affected if there was a flood in the Okefenokee? How would it be affected if there was a drought? Would this concern the whole chain or just part of it?
- d. Categorize relationships between organisms that are competitive or mutually beneficial.
 - While looking at Gray's Reef, look for two examples of a competitive relationship. Are they competing for food? Space? Now, find one example of a symbiotic relationship. How does each animal in the relationship benefit?

S7L5. Students will examine the evolution of living organisms through inherited characteristics that promote survival of organisms and the survival of successive generations of their offspring.

- a. Explain that physical characteristics of organisms have changed over successive generations (e.g. Darwin's finches and peppered moths of Manchester).
 - Try to find the copperhead snakes in the Ridge and Valley region. What characteristic does it have that make it hard to find? Give two reasons why this characteristic would be passed from generation to generation.
- b. Describe ways in which species on earth have evolved due to natural selection.
 - Take a look at the species in the *Life Develops in the Ancient Seas* gallery. Originally, all living things were confined to the water. List five ways different animals evolved to life on land.
- c. Trace evidence that the fossil record found in sedimentary rock provides evidence for the long history of changing life forms.
 - Find three real fossils in the exhibition. How old are the fossils? What does each fossil reveal about what life looked like at that time?

Eighth Grade

Science

S8CS8. Students will investigate the characteristics of scientific knowledge and how it is achieved.

- c. As prevailing theories are challenged by new information, scientific knowledge may change and grow.
- Find *Compsognathus* in *The Ruling Dinosaurs* gallery. This dinosaur was once thought to be covered only in scales. Based on new fossil evidence, it is now thought to have had feathers. Pick out two more dinosaurs from the room and come up with a hypothesis about a “known fact” for each one. Back your hypotheses with explanations. For example, do you think *T. rex* really was a carnivore? Why or why not? Do you think that dinosaurs like the *Stegosaurus* held their tails upright or dragged them on the ground? Why or why not?

S8P1. Students will examine the scientific view of the nature of matter.

- g. Identify and demonstrate the Law of Conservation of Matter.
- As you continually walk between the past and the present, think about the non-living aspects of the Earth. How have they each changed over time? Can you find one non-living item that is present in the same quantity on Earth now as it was 600 million years ago? What is it and what law tells you why it hasn't changed?

Social Studies

SS8G1 The student will describe Georgia with regard to physical features and location.

- a. Locate Georgia in relation to region, nation, continent and hemispheres.
- Think about where Georgia is located in the United States. Regions are natural, where as state lines are man-made. What regions do we have in Georgia and do we share those regions with the states around us?
- b. Describe the five geographic regions of Georgia: the Blue Ridge Mountains, Valley and Ridge, Appalachian Plateau, Piedmont and Coastal Plain.
- As you walk through the different regions, think about how each was formed and what makes them unique. List two things from each region that makes it different from the others.
- c. Locate and evaluate the importance of key physical features on the development of Georgia: the Fall Line, Okefenokee Swamp, Appalachian Mountains, Chattahoochee and Savannah Rivers and barrier islands.
- Observe differences in the physical features of the Appalachian Mountains, the Okefenokee Swamp and the barrier islands. How have these features played a part in Georgia's population distribution? Georgia's Fall Line is the line between the Piedmont and the Coastal Plain. There are rapid declines (waterfalls) in the rivers here due to the geological differences between the two regions. Are there a lot of cities near this line? Why or why not?
- d. Evaluate the impact of climate on Georgia's development.
- By evaluating the trees, try to determine temperature differences between the regions. Other than seasonal change, why would climates vary between parts of the state? How would this affect where cities are built?