

TEKS-Based Activity for Grade 4

Patterns and Adaptations in Plants and Animals

Description:

In this activity, students research natural regions of Texas for patterns and adaptations in native plants and animals. They compare plants and animals from an assigned Texas natural region to those in the Chihuahuan Desert natural region. They examine the plants and animals for adaptations that increase their survival rates.

Time Frame:

1 lesson (45 minutes)

Correlation to Texas Essential Knowledge and Skills:

During this activity, students will be exposed to the following Texas Essential Knowledge and Skills:

Note: Some TEKS statements below end with a ; or *and* and nothing thereafter—this indicates that further TEKS statements follow but are not included here.

(4.8) Science concepts. The student knows that adaptations may increase the survival of members of a species. The student is expected to:

(B) compare adaptive characteristics of various species; and

Note: The TEKS listed here are the main content TEKS for this activity; however, this activity may also cover additional content and process skills included in other TEKS.

Materials:

Name tags and job descriptions for each group
Poster board (1 sheet per student group)
Glue (for all student groups)
Markers (for all student groups)
Plant and Animal Patterns and Adaptations student investigation pages (included at the end of this activity)
Sources for pictures from a variety of ecosystems (calendars, magazines, etc.)
Science journals (1 per student; see Advance Preparation)

Note: If students live in a desert region, choose another natural region so they may compare their native plants with a different environment.

Background Information for the Teacher:

A **natural region** or **biome** is a region that has a particular climate and consists of all plants and animals living there. **Climate** is the weather for a particular region over a long period of time. It determines the types of plants and animals

that live in that area. Factors or elements that influence the climate are temperature, water, wind, and sunlight.

Texas has 11 regions or biomes referred to as the natural regions of Texas. They are Piney Woods, Oak Woods and Prairies, Blackland Prairie, Gulf Coast Prairies and Marshes, Coastal Sand Plain, South Texas Brush Country, Edmonds Plateau, Rolling Plains, High Plains, Trans Pecos, and Llano Uplift. The climate and soil types in the natural regions of Texas determine the types of plants found in the region, which in turn help determine the types of animals found there.

Advance Preparation:

1. Prepare job descriptions and name tags, such as recorder, materials manager, data collector, and reporter, for all groups.
2. Prepare a science journal for each student by folding four sheets of unlined paper in half, adding a cover of construction paper, and then stapling the sheets along the fold.
3. Have sources for students to collect photos of plants and animals, such as calendars, magazines, books, and internet websites.

Procedures:

1. Divide the class into four to six groups, and give each student the student investigation pages. Each group will be assigned to research either plants or animals from a different natural region of Texas using library, classroom, and online resources. Or, you can assign the same natural region to two different groups, one researching plants and the other animals. Be sure that the Trans Pecos natural region is not assigned, as that is the comparison region.
2. Students should determine average rainfall, average temperature, and the primary plants or animals found in the region. Have them record their findings in their science journals.
3. Next, students should collect pictures of typical plants or animals found in their assigned natural region, as well as those found in the Chihuahuan Desert.
4. Each group should organize their data, and then create a poster that compares the natural region they researched to the Chihuahuan Desert. Information about the Chihuahuan Desert appears in the student investigation pages. Students need to include the data on rainfall and temperatures, pictures of typical plants or animals, and information on adaptations of the different organisms. Somewhere on the poster students should have a Venn diagram showing the similarities and differences between the two ecosystems.
5. One student from each group will present their poster to the class.

Plant and Animal Patterns and Adaptations

Student Investigation Pages

1. Work in your groups to learn about plants or animals in an assigned natural region of Texas. Get information about the average rainfall, average temperature, and typical plants or animals in the natural region.
2. Collect data by making notes and collecting or drawing pictures in your science journals of the plants or animals found in your assigned natural region. Your group will choose three of the pictures to be included on the poster you will make.
3. Name adaptations that enable each organism to survive. The Recorder for your group should write the adaptations on the appropriate My Assigned Natural Region of Texas chart.
4. Next, read the information on the Chihuahuan Desert. Draw or collect pictures of three plants or animals from the Chihuahuan Desert. Write adaptations of desert organisms on the Chihuahuan Desert chart.
5. Compare the desert plants or animals with those from your assigned natural region. Look for patterns, properties, and adaptations. Write two comparisons in your journal.
6. Create a poster that includes three pictures of the plants or animals and facts about both the natural region you researched and the Chihuahuan Desert. On the poster, create a Venn diagram showing differences and similarities between the plants of both natural regions.
7. Choose a group member to present your group's chart to the class.

Chihuahuan Desert

The Chihuahuan Desert is part of the desert of North America located in the southwestern United States and central Mexico. Within the United States, it lies to the east of the great Sierra Madre Occidental mountain range and occupies part of southwest Texas, southern New Mexico, and the southeast corner of Arizona. It is found in the Trans Pecos natural region.

Deserts are characterized by sparse rainfall or aridity (annual rainfall of 10 inches or less) and high heat. Much of the desert soil consists of sodium, potassium, and other minerals. Depending on the minerals present, a desert can be fertile or barren.

Desert plants

Desert plants fall into two categories, drought evaders and drought resisters. The drought resisters, which include succulents and cacti, have evolved various methods to survive harsh desert heat and dry conditions. Some drought resisters, like succulents, store water in their fleshy roots, leaves, and stems. Other plants, like the creosote bush, grow deep taproots and widespread shallow roots. This type of deep and wide root system allows the creosote bush to reach both underground and surface water. Still other drought resisters have very few or very cleverly shaped leaves to help limit the moisture lost through the leaves. The Joshua Tree, for example, has waxy, spiny leaves that face upwards to catch any rain that falls. The waxy coating on the leaves helps prevent water evaporation.

The drought evaders are plants that grow at times or in places that ensure there is enough water to survive. Drought evaders often exist as seeds that lie dormant in the soil until it rains. The seeds grow into plants that often do not live very long or instead grow very slowly. Another type of drought evader may lie dormant when fully grown, producing leaves and flowers only when moisture is available and dropping these leaves and flowers during dry, hot periods. Other drought evaders grow in desert caves and crevices, taking advantage of cool, moist conditions. Most desert plants, whether they are drought evaders or resisters, tend to grow away from other plants to avoid competition for limited water supplies.

Desert Animals

Animals typically found in the desert include insects, arthropods, mammals, amphibians, and reptiles. Most desert animals are nocturnal or active at night, because it is cooler. In the undrained basin of the Chihuahuan Desert, several shrimp species appear every summer when rainfall forms temporary lakes and ponds.

Depending upon whether it is rainy or hot and dry, the desert may be home to many insects. Some insects found in the desert are beetles, ants, wasps, and moths. The insects

are abundant during the rainy season, but during droughts, you may only find their eggs, dormant pupae, and a few adults.

Some of the arthropods that may be found in the desert are spiders, scorpions, centipedes, and millipedes. They usually possess thick body coverings that protect against water loss.

Mammals include man, rodents, deer, antelope, rabbits, gophers, woodrats, foxes, coyotes, jackals, badgers, skunks, bats, and some cats. Invertebrates include shrimp and snails. Surprisingly, even some species of fish can sometimes be found in the few desert marshes, streams, and springs.

The amphibians include frogs, toads, and salamanders. Spadefoot toads burrow in the ground and hibernate until a rainy season. The toads then emerge, find a puddle of water, and mate. Eggs are laid, fertilized, and hatched within a day or two. Within a month, the tadpoles are mature and can burrow themselves in the mud to prepare for the drought season.

Reptiles, specifically snakes, lizards, and tortoises, make up the majority of animals found in the desert. The Gila monster, the only poisonous lizard in the United States, eats bird eggs, small rodents, and other lizards.

The birds include the Gila woodpecker, cactus wren, vulture, white-rump shrike, and the roadrunner. The Gila woodpecker turns saguaros (big cacti) into dwellings and is one of the chief architects of saguaro-hole homes.

Plants in My Assigned Natural Region of Texas: _____

Adaptations are characteristics plants and animals have that help them survive (e.g., spines on cacti) and changes a plant or animal makes to fit new conditions or new environments (e.g., chameleons changing color).

Write the names of 3 plants from your natural region in the first column and list one adaptation for each plant in the second column.

Plants From My Assigned Natural Region of Texas	Adaptations
1.	
2.	
3.	

Plants in the Chihuahuan Desert

Adaptations are characteristics plants and animals have that help them survive (e.g., spines on cacti) and changes a plant or animal makes to fit new conditions or new environments (e.g., chameleons changing color).

Write the names of 3 plants from the Chihuahuan Desert in the first column and list one adaptation for each plant in the second column.

Chihuahuan Desert Plants	Adaptations
1.	
2.	
3.	

Animals in My Assigned Natural Region of Texas: _____

Adaptations are characteristics plants and animals have that help them survive (e.g., active at night) and the changes a plant or animal makes to fit new conditions or new environments (e.g., chameleons changing color).

Write the names of 3 animals from your natural region in the first column and list one adaptation for each animal in the second column.

Animals From My Assigned Natural Region of Texas	Adaptations
1.	
2.	
3.	

Animals in the Chihuahuan Desert

Adaptations are characteristics plants and animals have that help them survive (e.g., spines on cacti) and the changes a plant or animal makes to fit new conditions or new environments (e.g., chameleons changing color).

Write the names of 3 animals from the Chihuahuan Desert in the first column and list one adaptation for each animal in the second column.

Chihuahuan Desert Animals	Adaptations
1.	
2.	
3.	