



Prairie Curriculum

PRAIRIE WEEK – DAY 5

“How Rocks Saved the Prairie”

TEACHER’S GUIDE
Kindergarten – 4th Grade

Time needed: 30 – 45 minutes
Materials needed: Paper, pencil

NOTE: The names of the rocks: **Limestone**, **Shale**, and **Flint** are capitalized throughout this presentation to make the words easily stand out to the students. They are not normally capitalized since they are not proper nouns.

Summary: Today we’ll learn how the rocks of the Flint Hills saved the tallgrass prairie

Slide 1 **The tallgrass prairie is a part of the United States where the grass can grow VERY tall!**

Slide 2 **As the prairie became home to more people, they changed the land.**

QUESTION: How do you think the settlers changed the land?

Slide 3 **Most of the tallgrass prairie was turned into farm fields – to grow corn and soybeans**

Slide 4 **But, not all of the tallgrass prairie could be plowed. It was too rocky!**

Slide 5 **These are the Flint Hills! These hills are in Kansas and Oklahoma. They have very rocky soil – that can never be plowed.**

Slide 6 Map of the United States – showing where prairie is located. Arrows point out the Flint Hills and the light green area that was historically tallgrass prairie.

TEACHER HELP: There are 3 different kinds of prairie – based on how much rain an area receives. 1. Tallgrass prairie (most rain), 2. Mixed-grass prairie (medium rain), 3. Shortgrass prairie (least amount of rain). The more rain an area has, the taller the grass will be.

Unfortunately, because the tallgrass prairie received enough reliable rain and didn't have many trees, it was a perfect area to plant crops. Farmers knew they'd get enough rain to support the crops. That's why most of the tallgrass prairie is gone – up to 96% of it has been developed into farms and towns.

Slide 7 **Here are the Flint Hills – can you see the layers or ripples in the hills?**

These layers are made up of two different kinds of rock...

Slide 8 **One type of layer is of white rock, called “Limestone”**

Limestone is very hard rock made from the shells of sea creatures, like oysters.

The Flint Hills was once a sea!

TEACHER HELP: The Flint Hills was under water – in an inland sea known as the “Permian Sea”. This was 250 – 300 million years ago. The creatures living in this sea were primitive, and few of them had hard skeletons or backbones. Many of them did have shells, and it's these shells that fell to the floor of the Permian Sea and collected at such levels, to form the limestone layers.

The Permian Sea periodically dried up and the sea floor collected dust, blown in by the wind. The dust covered the limestone beneath it and built up a layer of mud. Eventually, the water returned to the Permian Sea, and new layers of shells dropped down to cover the mud. The mud layer eventually became the shale layer (it's also known as “mudstone”). The shale layers are quite soft and easily eroded. The Permian Sea regularly dried up and re-filled with water over and over – leading to the production of the Shale – Limestone repeating layers.

Slide 9 **In between the Limestone layers are layers of “Shale” – a soft rock made from mud**

TEACHER HELP: Arrows fly in pointing out Limestone and Shale – noting the different colors of the two layers. This photo was taken soon after burning – this is the best time to see the geology of the Flint Hills.

Slide 10 **The Flint Hills are made of repeating layers of Limestone and Shale – like this:**

TEACHER HELP: An arrow flies in to indicate the image – this photo was taken by Interstate 70 and Highway 177 (Bill Snyder Highway) – showing the distinct layers between the Limestone and the Shale. The red color of the Shale indicates that it was mud that was exposed to oxygen – the iron in the Shale got rusty due to the oxygen. The green color of the Shale indicates that it was under water, and not exposed to oxygen.

Slide 11 **But...what about the Flint?**

TEACHER HELP: Image of Fred Flintstone (noting the “Flint” of Flintstone) and a photo of some classic Flint. Note the dark grey color and sharp edges. Flint may also be referred to as “Chert”. Either term is correct.

Slide 12 **Flint**

- **Is gray, smooth rock**
- **It can have VERY sharp edges**
- **It looks and feels different from the rough Limestone**
- **These 4 rocks have Flint in the middle – surrounded by white Limestone**

Slide 13 **Where is the Flint?**

Flint is found in just some of the Limestone layers.

TEACHER HELP: Recall that there are many layers of repeating Limestone and Shale. Flint is found in only “some” of the Limestone layers.

For example, there is Flint in the top layer of Limestone at the top of the Konza Prairie Nature Trail – near the interpretive sign. Visitors may ascend the “big hill” and they will easily find Flint there at the top. However, visitors will have a hard time locating Flint on the Limestone layer at the bottom of the hill.

Slide 14 **What is Flint good for?**

Flint was used by Native Americans to make hard, sharp arrowheads.

Slide 15 **What is Flint good for?**

Flint is hard and sharp!

Flint Hills residents who drive on gravel roads (that contain Flint pieces) learn this – they must replace their tires frequently.

TEACHER HELP: The photo is of a bicycle tire – from a gravel bicycle – that has had a puncture repaired with duct tape. Flint is very hard on tires!

Slide 16 **The next time you're hiking in the Flint Hills, be on the lookout for:**

- Limestone
- Shale
- Flint

The rocks that saved the tallgrass prairie!

Slide 17 **QUESTION:** How did rocks save the tallgrass prairie?

Slide 18 **QUESTION:** What have you learned about the prairie this week?

Ask the students: Do you want to make any changes to the drawing of the prairie you made on Day 1?