**Solar Lesson Plan Format**

**Age Level:** Second Grade

**Subject(s) Area:** Science and Art

**Materials Needed:** “Animals of Theodore Roosevelt National Park - Best Parks Ever – 4346” video (<https://www.youtube.com/watch?v=jQdlptvFFg4>); North Dakota Habitats PowerPoint; computer; projector; cattail grass stem and rose hip seeds from prairie rose plant; white construction paper and other colors of construction paper; modeling clay; pencils; crayons; scissors; glue; stapler; rulers; and diorama example.

**S**tandards**:**

**Code and description:**

**Science Standard:**

|  |  |
| --- | --- |
| **2-LS4-1.** | **Make observations of plants and animals to compare the diversity of life in different habitats.**[Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.] [*Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.*] |
|  |  |

**Art Standard:**

**4.1.1** Know differences between visual art media\*.

**4.6.2** Know connections between the visual arts\* and other disciplines in the curriculum.

**O**bjectives**:**

**What will the students know or be able to do?:**

The learner will be able to **compare** and **contrast** the diverse plants and animals in the Badlands, prairie, and wetlands habitats of North Dakota through a “North Dakota Habitat” PowerPoint activity and game.

The learner will be able to **construct** a basic construction paper diorama about one of the habitats presented in the PowerPoint activity and game by creating one animal out of clay and some plants, either with crayons or construction paper, from the habitat they chose for their diorama.

**Cognitive Level of Lesson (Bloom’s Taxonomy): Understanding and Applying**

**L**earning Activities:

**(35 minutes)**

* **Opening Element:**  Students will watch a video titled “Animals of Theodore Roosevelt National Park - Best Parks Ever – 4346” (<https://www.youtube.com/watch?v=jQdlptvFFg4>) as an introduction to North Dakota habitats. (This video is two minutes and fifty-five seconds.)
* **Opening Element:** After the video students will be asked, “What do you think a habitat is?” before I change the video slide to the slide with the definition of habitat on it. *(Habitat will be the necessary vocabulary word for this lesson.)* I will choose two student volunteers to tell me what they think the definition of a habitat is. *(Student answers should include at least some components, but do not need to include all, in the following definition of a habitat: “Habitats are environments, or places, where wildlife can get their food, water, shelter, and is a place to make their homes.”)*
* “Now, we will be going on a trip through the different habitats in North Dakota. Our first stop on our trip will be a hike in the Badlands!”
* Using the picture of the Badlands on the “The Badlands Habitat in North Dakota” slide, students will be asked, “By looking at this picture, what animals and plants do you think grow and live in the Badlands?” Two student volunteers will be chosen to share with the class what plants and animals they think live in the Badlands. *(Students answers should include at least one plant and one animal from each of the following: “Plants that grow here could be grasses, trees, and wildflowers. Animals that live here could be pronghorn, big horn sheep, and prairie dogs.”)*
* Students will be told, “The Badlands have shortgrass prairies and small woodlands. The Badlands also have hills, cliffs, valleys, gullies, and flat-topped, very steep hills with flat sides. Some habitats, such as the Badlands, can have other habitats within them, such the shortgrass prairies and woodlands.”
* “The first plant we will see and learn about on our hike in the Badlands is called the scarlet globemallow. The scarlet gobemallow does not need much water to live, which is good because the Badlands can be very dry. Based on the picture and facts on this slide, why do you think this plant can live without much water?” I will choose two student volunteers to answer this question. *(Student answers should include: “The deep roots that go deep in the soil to reach water for it to live.”)*
* “Another plant we will see and learn about on our hike in the Badlands is called the Little Bluestem grass. Now, this is an interesting plant. When it is little, the animals like to eat it, but when it is big, the animals do not like to eat it. When it is big, the birds like to eat its seeds!”
* “The next habitat that we will see on our trip is the North Dakota wetlands! Looking at this picture, why do you think this habitat is called the wetlands? *(Student answers could be that it has lots of water and does not seem to have much land.)* Would you find plants in these wetlands? Do you think you would find the same plants here as in the Badlands? *(Student answers could include: “No because the Badlands do not seem to have that much water.”)* What kinds of animals do you think would live in the wetlands?” *(Student answers could include: “Some animals that live in the wetlands could be ducks, frogs, turtles, and fish.)*.
* Next, I will show the students an actual cattail stem that I brought from home and ask them, “Do you think a plant like this would grow in the wetlands?” I will choose one or two student volunteers to answer this question. “The grasses and rushes (tall plants with hollow stems) that grow in the wetlands need and like lots of water. Some wetlands have water all year long and some only have water at certain times of the year.”
* (Show students the “Wetlands Plant: Cattails” slide.) “The plant that we will be learning about on our trip to the wetlands is the cattail.” I will share and explain to students the facts on this slide and then ask the following question, “Why do you think that deer and pheasants like to hide in the cattails?” *(Students answers should include: “The cattails are tall and thick and the deer and the pheasants cannot be seen in the cattails.”* *I will choose one or two student volunteers to answer this question.)* “This plant’s brown top does not just drop seeds. It goes ‘POOF!’ and soft, fuzzy seeds, like dandelion seeds, fly everywhere!” Ask students, “How do cattails let go of seeds?” *(Student answers should include: “They go ‘POOF!’”)*
* (Show students the “The Prairie Habitat in North Dakota” slide.) Then, I will say, “The last habitat that we will see on our field trip of the different North Dakota habitats is the prairie. There are three types of prairies. For each type of prairie, I am going to make hand motions and you will do those hand motions with me. Some prairies have only tallgrass *(do hand motion for tallgrass)*, some have only short grass *(do hand motion for shortgrass)*, and some prairies have both shortgrass and tallgrass *(do tallgrass and then shortgrass hand motions)*. These types of prairies are called mixed-grass prairies. *(For each type of prairie, students will do hand motions with me to represent the different grasses. For the tallgrass prairie, students will raise their hands high in the air. For the shortgrass prairie, students will move their hands, so that they are almost touching the ground. For the mixed-grass prairie, students will move their hands high in the air for the tallgrass prairie and then move their hands down, so that their hands are almost touching the ground.)* When I think about each type of prairie and how much rain each kind gets, I think of the story of *The Three Bears* to help me remember how much rain each kind gets. The tallgrass prairie gets a large amount of rain, like Papa Bear gets a large amount of porridge. The shortgrass prairie only gets a small amount of rain, like Baby Bear only gets a small amount of porridge. The mixed-grass prairie, or a prairie that has both shortgrass and tallgrass, gets a medium amount of rain for both tallgrass and shortgrass to grow, like Mama Bear only gets a medium amount of porridge. By looking at the picture, what kinds of plants and animals do you think live here? *(Student answers could include: Grass and wildflowers (Crocus, Wild Prairie Rose, and coneflowers), foxes, rabbits, skunks, gophers, and coyotes.)* Do you think that the same plants or animals that live in the Badlands or the wetlands would live here too?”
* (Show the “Prairie Plant: Western Wheatgrass” slide.) “The first prairie plant that we will be looking at is the Western Wheatgrass.” I will share with students the different facts on the slide and then ask them after I tell them that the Western Wheatgrass stems stay straight through the winter, “How would this help animals in the wintertime?” *(Students answers should include: “This could help animals find food and shelter.”)*
* (Show the “Prairie Plant: Wild Prairie Rose” slide.) “The last prairie plant that we will be looking at and learning about is the wild prairie rose.” After I share with them the facts about the wild prairie rose, then I will show them the rose hips from a prairie rose flower that I brought from home. “I am showing you the rose hips, or the fruit, from the prairie rose flower. Have you seen the prairie rose flower before?”
* “Now that we have learned about all three habitats, there are some animals that I found and I am not sure which of the three habitats these different animals belong to. We are going to become nature detectives. Can you help me discover which habitats some animals call home?”
* Before telling students the clues in the “Clue Box” on the “Western Meadowlark” slide, I will show them a very short clip of a western meadowlark singing (<https://www.youtube.com/watch?v=lvAUgFb1cLY>). (This video is fourteen seconds long.) Now I will share with the students the clues on the western meadowlark slide and then ask them, “Do you think that the Western Meadowlark lives in the Badlands, the Wetlands, or the Prairie?” *(Student answer should be: the Prairie.)*
* Then, I will show the “Muskrat” slide and share the clues in the “Clue Box” with the students and then ask them, “Do you think that the muskrat lives in the Badlands, the Wetlands, or the Prairie?” *(Student answer should be: the Wetlands.)*
* Next, I will show the “Pronghorn” slide and share the clues in the “Clue Box” with the students and then ask them, “Do you think that the pronghorn lives in the Badlands, the Wetlands, or the Prairie?” *(Student answer should be: the Badlands.)*
* I will show the “Prairie Dogs” slide and share the clues in the “Clue Box” with the students and then ask them, “Do you think that the prairie dog lives in the Badlands, the Wetlands, or the Prairie?” *(Student answer should be: the Badlands.)*
* Lastly, I will show the “Blue-Winged Teal” slide and share the clues in the “Clue Box” with the students and then ask them, “Do you think that the blue-winged teal lives in the Badlands, the Wetlands, or the Prairie?” *(Student answer should be: the Wetlands.)*
* **Wrap-Up:** After we have finished our “Nature Detectives” game, students will be told that they will each create one of the three habitats that we discussed with plants and one animal from the habitat they have chosen. Students will also be instructed that they will create at least one animal from their chosen habitat from modeling clay. Students will also be instructed that they will need to make their scenery in their diorama look like the habitat that they have chosen. Students will be instructed that will need to write the name of the habitat they have chosen on the back of their diorama in addition to their name. I will create an example of a diorama that I did and show that to the class. I will also show students how to make an animal out of clay. Before this lesson, I will have put together the white construction paper dioramas for the students, but they will have to add drawings of plants and their clay model animal for their habitats. Students will be told that they will have the remainder of the class time to work on their dioramas.

**A**ssessment:

**Formative:** My formative assessment of the students’ understanding will be the questions that I ask them while I am teaching the content in my “North Dakota Habitats” PowerPoint and “Nature Detective” game. My formative assessment will also include their North Dakota habitat diorama.

**Individual Measurability:** Students will create one habitat that was presented in my “North Dakota Habitats” PowerPoint with plants, one type of animal made from modeling clay, and have the correct scenery for their habitat based on the photographs of each habitat that was shown in my PowerPoint. Students will turn in these dioramas to me and I will grade their dioramas based on the correct scenery for the habitat they have chosen, the plants types they have drawn for their chosen habitat, and at least one model clay animal that lives in their habitat.

**Summative:** *(This activity would be completed at the end of the habitat unit; however, because I am only teaching this lesson for this unit, I would not give this assessment to the students after this lesson.)*

1. Write one paragraph about one habitat you learned about. Include different types of plants and animals found in that habitat.
2. Could animals that need lots of water live on the prairie? Why?
3. Do animals use plants just for food or could they use plants for food and shelter? Why?

Reflection:

The time I had allotted for this lesson was extended by ten minutes, due to a kind offer by my cooperating teacher. I started the lesson by saying that we were going to be learning about habitats and then I showed the video. The students were engaged in the lesson immediately and they seemed to love the video. I could tell by their answers to my second question, which was, “What do you think a habitat is?”, that they already had a good understanding of what habitats were. Some answers were, “It is where animals get their food and make their homes. It is where they get water.” When I told them that we would be going on a “field trip” through the different North Dakota habitats, they became excited immediately and said , “Yay!”. They became even more excited when I told them that our first stop would be on a hike through the Badlands. When I showed them the picture of the Badlands and asked them what kinds of plants and animals they thought would live there, their answers included grasses, trees, flowers, prairie dogs, bison, rabbits, and rattlesnakes. Their answers told me that they were applying what they saw in the picture to what kinds of plants and animals live there. They were eager to discover what the first plant was. The first plant was the scarlet globemallow, which they thought was a funny name. After I explained the information on the slide and then asked them why they thought this plant could live without much water since the Badlands were very dry, the first student I called on said that it was because they had deep roots to get to the water in the soil. Even though the slide told them that this plant had a very deep root, I was surprised at how quickly that student was able to apply the information I told him and say a correct answer so quickly. When showed them a picture of the wetlands and asked them why they thought this habitat was called the wetlands, their first response was that there was a lot of water and not much land. Most of the students thought that there would not be the same plants and animals in the wetlands as there were in the Badlands, which told me that they were applying what they had just learned and their previous knowledge to help them determine this. When I showed them my cattail stem and asked them if they thought this would grow in the wetlands, most of them thought no at first, but then changed their answers to yes. On the cattails slide, the students immediately made the connection that the picture of the cattails and my cattail were the same plant. They especially loved the part when I told them that the cattail seeds went POOF! out of their thick brown tops. Almost right after I said this, one student questioned if they really did poof. When I told him a quick story about how my mother and my grandmother had both seen one do it, he was very surprised and was curious to know why the one I had had not poofed! The students also loved saying POOF! The students loved doing the different hand motions for the different prairies with me and liked and understood my “*The Three Bears”* analogy for the amount of rain each prairie gets. When I showed them the Western Wheatgrass and told them that the stems stay straight through the winter and then asked them how it would help the animals in the winter, some of their answers included: that it would not crush, but protect birds on the ground and that it could be food for animals. Most of the students made the connection that some animals that live on the prairie could also live in the Badlands. They were very excited and eagerly participated in my “Nature Detectives” game. I had thought that it would possibly take them awhile to determine the habitat each animal belonged to, but to my surprise and delight, they were almost always ready to tell me an answer, which was usually the correct answer, before I even finished reading the clues! The students were eager to create a habitat diorama of their own based on one of the habitats we discussed and were fascinated by my example. Even though there was more time for my science lesson than originally planned, the students were not able to finish their habitat dioramas in the time allotted for this lesson. They will have time tomorrow to finish their dioramas. Overall, I felt this lesson went very well and that my objectives were meant based on their responses to my questions during the lesson, the game, and what I was starting to see in the backgrounds on their dioramas. Mr. Conlon suggested that I extend my introduction to habitats and provide more of a preview to the habitats topic. He also said allow the students to look at the different pictures of the habitats longer and think more about what kinds of plants and animals could be found in the habitat instead of having more informational slides where I am just telling them about the different plants in each habitat. He said that I should have included a closing to my lesson, which could have been questions, such as, “What did you learn about the different North Dakota habitats?” and “How are you going to explain your dioramas to your parents when you take them home in connection with what you learned about habitats in class?” The next day when I asked them the first question in class, they told me that habitats were where animals lived, found water, and their food. Most of the students’ replies to the second question included describing what we learned about habitats in class the day before and then describing the habitat they made in their habitat dioramas. Their responses told me they really understood the content we learned about habitats in general and the different habitats that we discussed in North Dakota. When the students completed their habitat dioramas, those dioramas not only showed the creativity of the students and their effort, but demonstrated their understanding of what the different habitats were by explaining what was in their habitats. The students became so excited and engaged in the diorama activity, that they asked me if they could see pictures of the different animals in their habitats that we discussed to make their clay animals look as close to the real animals as possible. The finished dioramas definitely demonstrated to me that they met my objectives for this lesson.

**Habitat Diorama Example**

The picture shown below is an example construction paper diorama that I made to use as an example to show the students. The habitat diorama that I created was of the wetlands with the cattails as my plant and the Blue-Winged Teal duck as my animal.

