



COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES

Women in Science & Engineering

The Bio/Diversity Project

Lesson Title: **Adaptations of Desert Animals and Desert Humans**

Teacher: Juliana Williams and Tara Doyle

Grade Level: *5th*

Time: *1 hour*

Adapted from: <https://www.uen.org/lessonplan/view/28334>

AZ State Science Standard:	5.L3U1.10 Construct an explanation based on evidence that the changes in an environment can affect the development of the traits in a population of organisms
Learning Objective:	<ul style="list-style-type: none">• <i>Students will be able to explain how adaptations of humans, plants and animals in the Sonoran desert help them survive.</i>• <i>Students will be able to show understanding of the scientific method by writing their own hypothesis.</i>
Language Objective: (Optional)	N/A

Scientist of the Week:

Scientist of the Week



Mariana Matus (1986-present)

Born in Mexico City, Mexico

Biologist and CEO of BioBot Analytics

She discovered that sewage contains viruses and bacteria. Today, her company tracks the COVID-19 pandemic through sewage! This helps scientists understand how the disease spreads.

Explain how her company is helping us to adapt to the pandemic. Science and research can be considered a human adaptation because it helps us survive in a changing environment.

Vocabulary

- *Adaptation*
- *Camouflage*
- *Hypothesis*
- *Succulent*

Materials

- *Nearpod:*

<https://share.nearpod.com/kXqjLh1jab>

- https://www.youtube.com/watch?v=Q0RY_rPE0Aw "Food, Medicine, and Spirituality in the Sonoran Desert". (0-1:52)

Seasonality:				
<i>Monsoons</i> <i>July-Sept.</i>	<i>Autumn</i> Oct.-Nov.	<i>Winter</i> Dec.- Feb.	<i>Spring</i> Mar.-Apr.	<i>Dry Summer</i> May-June
Guiding Questions:				
<ul style="list-style-type: none"> ❖ What techniques did ancient humans, such as the Tohono O’Odham, use to survive extreme weather in the Sonoran Desert? ❖ Why do animals need to adapt to the desert climate and conditions? 				

5E Steps	Teacher Strategies	Student Behavior
<p>Engagement/Introductory Activity:</p> <p>This is what you will do to get the students engaged in and excited about the topic of the lesson! It should also provide an opportunity for you to get an idea of what they do (and do not) already know, and the assumptions that they have going into the lesson.</p>	<p>We will ask introductory questions using the NearPod open ended question function, as well as chat. First we will ask students how humans adapt to life in the desert using the open ended question function in NearPod. This will allow us to assess their understanding of human adaptations, which we have covered in previous lessons.</p> <p>To further assess their knowledge, we will ask them to recall adaptations from previous lessons and ask them what</p>	<p>Students will be asked “How do humans adapt to life in the desert?” through NearPod. Students will then answer by typing in their answer. If they have technical restrictions and are not able to access it, they will type their answer into the chat.</p> <p>After reviewing human adaptations to the Sonoran desert, the students will be asked “What was the Bark Scorpion’s adaptation?” and “Do you remember what’s special about cacti roots?”.</p>

	<p>certain animals adaptations were. (More specifically, we will ask what the Bark Scorpion's adaption was and what is unique about the Saguaro's root system.)</p>	<p>They will reply in the chat or answer verbally. For this question the students must recall information introduced in previous lessons. This will help them more easily recall additional information about adaptations that had been introduced in the past lesson so that the concept is easier to learn.</p>
<p>Exploratory Activity:</p> <p>Provide step-by-step instructions on what the teacher and students will do in this activity to gain new skills and/or knowledge. Attach worksheets, PowerPoints, video links, or other material used to this section.</p>	<p>After reintroducing the students to human adaptations in the desert, we will play a 3 minute clip from a Youtube video about adaptations by the Tohono O'odham in the desert. The Youtube video is https://www.youtube.com/watch?v=Q0RY_rPE0Aw and is called "Food, Medicine, and Spirituality in the Sonoran Desert". This video features a native man who has learned traditions first hand, and gives a wonderful account on adapting and finding food in the desert.</p>	<p>After reviewing human adaptations in the desert, the students will watch a Youtube video through the presentation via the video add-on in NearPod. The video will automatically play and the teacher will cut the video off at the proper point. The student will be asked to consider expected or unexpected food sources in the video.</p>
<p>Explain:</p> <p>What questions or prompts will you use to get students to explain their observations or to explain what the outcomes of the activity that they participated in were? This should provide an opportunity for students to communicate their new understandings, as well as to articulate what they still do not understand.</p>	<p>After learning about the adaptations of desert succulents, jackrabbits, quails and kangaroo rats (water conservation, heat and drought tolerance) we will ask students to draw their own imaginary desert creature. This animal can be completely made up, but it must have at least two adaptations that help it survive in the desert, i.e. adapting to high temperatures or low rainfall. Then, we will give students the opportunity to</p>	<p>Students will draw an imaginary creature that is adapted to live in the Sonoran Desert. Then, students will explain what features of the animal can be considered adaptations. This activity will be done through the Nearpod "Draw It" add-on, and if students are unable to access Nearpod they can draw on a whiteboard or piece of paper.</p>

	<p>show their drawing and explain what adaptations they came up with.</p>	
<p>Extension Activity/Questions:</p> <p>This section provides an opportunity for students to connect the knowledge that they have gained to other contexts – can they take what they learned and logically expand upon it, or apply it to alternate situations? Provide one or two additional ideas for activities that students can use to expand upon the new knowledge that they have gained.</p>	<p>In the extension activity, we will examine one particular species from our lesson in greater depth. We will compare two animals: the desert cottontail rabbit and the snowshoe hare. Although they look similar, these species evolved to survive in very different environments, and we will discuss the physical differences between them. These physical differences include fur color, feet structure (such as how the snowshoe hare has feet adapted to walking in snow.) Then we will think about why those characteristics would be helpful for a certain habitat.</p>	<p>Students will brainstorm the similarities and differences between the two species. Students may notice how the ear size, fur color, foot shape, and tail differs between the two animals. Then, students will discuss why these features make each species well adapted to its environment. Students will learn the term “camouflage” in relation to the fur colors of the two species and will describe the importance of coloration in avoiding predator attacks.</p>
<p>Evaluation Activity:</p> <p>How will you evaluate whether or not the students have achieved the learning objective(s) of the lesson?</p>	<p>In the evaluation activity, we will test students’ knowledge of the various Sonoran Desert adaptations covered in the lesson. This will be done through the “Matching Pairs” game in Nearpod. We have provided brief descriptions of six adaptations, along with pictures of the plants and animals they correspond to. Students will have 5 minutes to match the descriptions to the pictures.</p>	<p>Students will recall that cacti have thick, waxy skin to keep water inside, and that their shallow roots allow them to absorb more rain. Students will also match “the ability to absorb water by eating food” with the kangaroo rat, and “staying underground to avoid the heat of the day” with the bark scorpion. Students will also match “big ears that help to release extra heat” with the jackrabbit.</p>