



# 1st Grade, Unit 1: Spectacular Saguaros! Lesson Plan

**Driving Question:** How do saguaro cacti survive in the Sonoran Desert?

**Background:** Week 1 of Spectacular Saguaros is focused around helping students understand how saguaros are uniquely built for desert survival. Students will learn about the many unique parts of a saguaro (roots, pleats, spines, waxy skin, etc.) that help them collect and keep water, regulate temperature, etc. Students will look at photos and videos, simulate saguaro skin and its pleated stem, and develop a model of a saguaro as part of this section of instruction.

## **Standard(s):**

- 1.L2U2.7 Develop and use models about how living things use resources to grow and survive; design and evaluate habitats for organisms using earth materials.
- 1.L2U1.8 Construct an explanation describing how organisms obtain resources from the environment

including materials that are used again by other organisms.

## **Materials:**

- Chart paper
- Copies of probe handout
- Paper towels
- Wax paper
- Tape
- Water
- Green construction paper
- Play doh (green) OR cucumber halves
- Toothpicks
- Plastic spoons
- Jellybeans
- Pipe cleaners/chenille stems
- Copies of Saguaro Song (optional)
- Copies of elaborate handout
- Copies of student self-assessment (optional)
- Copies of evaluate handout
- Vocabulary cards

**Probe:** *Time: 10-15 minutes*

Give each student a copy of the probe handout. Students will cut out photos of desert weather/plants/animals. They

should glue to their page any pictures of what they believe helps a saguaro grow. They can glue to the back of the paper those they think do NOT help a saguaro grow.

\*Use this information to see what misconceptions your students may have! You might keep these papers and have students re-do this activity at the end of the 3 units to see how their knowledge changes their results!

**Phenomena:** *Time: 10-15 minutes*

Using the teacher slide deck, show students the guiding question: How does the saguaro survive in the sonoran desert?

-Show students the time lapse video of a saguaro. *\*Note: the video is set to mute. The video's audio explains what we want students to explore. You can absolutely show the video again with sound AFTER completing the explore and explain portions of Unit 1.*

-Discuss with students:

\*What do you wonder about what you saw in the video?

\*What do you notice about what you saw in the video?

-Write down students' ideas on a chart paper/Wonder Wall to refer to while learning about saguaros throughout the week.

**Engage:** *Time: 10-15 minutes*

Using the teacher slide deck, show students pictures of saguaros up close and far away. Have students discuss what they notice about the parts of the saguaro and its surroundings. Ask:

- \*What is the skin of a saguaro like?
- \*Imagine you were drawing a saguaro. What parts would you need to include? Why do you think those parts are there?
- \*What do you notice about the area around the saguaro?
- \*What other plants do you see? What is the ground like? The sky?

Record students' ideas on chart paper.

**Explore:** *Time: Two sessions of 20-25 minutes*

1. With you students, completely wet two paper towels. Cover one **completely** with wax paper and tape it closed. Leave both out for a significant amount of time (overnight or over the weekend work well).
  - After a significant amount of time, have students observe the paper towel that was left out, noticing that it is (mostly) dry. Then, unwrap the paper towel that was wrapped in wax paper. It should still be wet.

-Discuss with students: which paper towel was most like a cactus? Lead them in understanding that the towel wrapped in wax paper was like the saguaro, which has waxy, waterproof skin. This allows the cactus to keep the water inside from drying out, which is helpful in the hot, sunny desert!

2. Revisit with students what they noticed about saguaro skin from the upclose pictures they looked at during the “engage” portion of the unit. Point out the pleated, or grooved, pattern of the stem.

-Give each student a piece of green construction paper. Guide them through folding their paper accordion style. Then, have students try and connect the ends of their papers, making a cylinder-like shape. Can they make their cylinder bigger and smaller?

-Discuss how this is similar to how a cactus can swell to take in water and shrink as water is used. Additionally, these grooves guide rainwater straight down to the roots of the cactus to be used!

**Explain:** *Time: 30 minutes*

-Read the explanation slides on the slidedeck, discussing each critical part of a saguaro and how it helps the saguaro survive.

-Discuss what in the ecosystem surrounding the saguaro helps it survive (nurse plants, sun, rain, etc.)

-Using the slides, review the parts of the saguaro with children, and try singing the Saguaro Parts Song to help students retain the vocabulary and information they've just learned!

**Elaborate:** *Time: Two sessions of 20-25 minutes*

1. Review with students how the different parts of a saguaro function to help it use resources to survive (taking in or storing water, sunlight, etc.). Then, have students make a model of a saguaro using a variety of materials- playdoh for the stem (halves of cucumbers also work well and mimic a saguaro's waxy skin), a spoon to carve pleats, toothpicks for spines, jellybeans for fruit, pipe cleaners for roots, etc. You may find it useful to have students develop their models in pairs. Once students have made their models, have them share or present their model to another partnership, and then go back and adjust their models if needed to improve their accuracy or add any parts they may have missed.

2. Pass out copies of the "elaborate" handout and have students draw and label the model they made. Then, have students write a sentence explaining how one part of the

saguaro helps it survive. For example, “Roots help the cactus take in water when it’s available.” or “The stem helps hold water and makes food from sunlight.”

3. Optional- Have students use the student-self assessment checklist to check the completeness of their model. Students will also write one thing they did well and, if needed, one thing they could change, add, or improve.

**Evaluate:** *Time: 20-30 minutes*

Students will receive a copy of the “evaluate” handout. This handout shows a saguaro outline in the middle of the paper. Students should add parts they learned about to the saguaro, as well as important conditions for the saguaro to thrive (a nurse tree for shade, sunlight or rain). Then, have students label what they can. If students finish early or need an extension, students may write a sentence telling what a cactus needs from the desert to survive.

### **Optional Extensions:**

- Visit a saguaro! Go observe a saguaro and draw what students see. How many arms does it have? Are there any holes in it? Feel the waxy skin, etc.
- Measure a saguaro! If you have a saguaro nearby, use a string to measure its circumference. After a rainy day, measure the same saguaro again with a

different piece of string. Then compare the two!  
Discuss why the saguaro is bigger after rainfall.