Saguaro Cactus Lesson Plan
Grade: 1st.
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Introduction:
This unit incorporates reading, writing, science and math. Visual, languages, auditory and fine motor learning modalities are incorporated in this unit.

Standards:
1. Understand the meaning for and application of the operations of addition, subtraction, multiplication and division.
2. Demonstrate with models to show the process used in addition.
3. Demonstrate with models to show the process used in subtraction.
4. Explain the concepts related to units of measure and demonstrate the process of measurement with non-standard, U.S. customary and metric units.
5. Select the appropriate unit of measure for a given characteristic of an object. Length - inches, feet, and yards; or centimeters and meters.
6. Select the appropriate tool to measure the given characteristic of an object.
7. Measure a given characteristic of an object using standard units of measure.
8. Compare units of measure to determine more or less relationships.
9. Length.

Behavioral Objectives:
The main objective of this lesson is to open the eyes of the students as to how the Saguaro cactus holds water until it is needed during drought time. The objective will be met through a simulation of measuring a Saguaro cactus circumference while holding water and again during a drought. The purpose of this lesson is to activate prior knowledge by reading “Cactus Hotel.” This story will introduce students as to how plants and animals live in a desert.

The student will be able to:
1. Share prior knowledge.
2. Make a model showing size variance of the Saguaro cactus (Full and empty of water) with 80% accuracy.
3. Use a ruler or tape measure to measure the circumference of a Saguaro cactus that is full and empty of water with 90% accuracy.
4. Explain how the Saguaro cactus retains water with 100% accuracy.

Anticipatory Set:
1. Signal to have the students move to the floor for story time.
2. The teacher will ask if anyone has been out in the desert and looked at a cactus.
3. The teacher will ask the students to tell their neighbor about what they saw when they looked at a cactus in the desert.
4. The teacher will listen as several students describe what they saw.
5. The teacher will write on a pre-made K-W-L Chart what the students describe about a cactus under “K”.
6. Explain that the students will learn some new facts about the Saguaro cactus as they read the story, Cactus Hotel.
7. Explain that they should listen for what animals live in a Saguaro cactus and what happens to the cactus when it rains and during drought times.
8. The teacher will write what the students are to listen for in the story under “W” on the K-W-L Chart.
9. The teacher will ask the students to retell the story as a group and give clues if they need help remembering.
10. Ask the students to talk with their neighbors about what animals lived in the Saguaro cactus and what happened to the Saguaro when it rained and during drought time.
11. The teacher will ask the students the above questions and write answers on the K-W-L Chart under “L”.

Teacher Input:
K-W-L Chart—What do you know? Sharing about cacti. Students, have you ever been out in the desert? When you were there? Did you see a cactus? Tell your neighbor what you saw. Please tell them what the cactus you saw looked like and I will write it down on the “K” side of the chart. We will take turns going around the class writing down what everyone says. Please remember to listen while other students are talking.

Student 1: “We went and saw a little cactus that had a lot of stickers.”
Teacher: “Excellent! I hope you didn’t touch it!”
Student 1: “No, my mom told me to stay next to her.”
Student 2: “I have a big cactus in the backyard. It’s bigger than me.”
Student 3: “My grandma has a round cactus at her house.”
Teacher: “Great job! I really liked how you listened while students were speaking.”

K-W-L Chart: What do you want to learn?
Teacher: “Students, it’s wonderful that you have seen a cactus in the desert. Now I want to show you a Saguaro cactus. Let’s practice saying the word Saguaro. Great! I will read a story titled, “Cactus Hotel” which is a story about a Saguaro cactus and I want you to listen for specific things. The first thing I want you to listen for is what animals live in the Saguaro and then what happens to the Saguaro cactus when it rains and during a drought. When we are finished reading the story, we will write our ideas on the K-W-L Chart under the W.”

K-W-L Chart: What did we learn?
Teacher: “Class, now that we have read the book, “Cactus Hotel,” discuss with your neighbor what animals lived in the Saguaro cactus. Thank you, for keeping your voices at a classroom level. We will go around the class to find out what animals lived in the Saguaro and I’ll write it on the “L” section showing what we learned.”

“I can tell you were listening, great job! Now, please tell your neighbor what happened to the Saguaro cactus when it rained and during a drought.”
“Let’s go around and tell me what happened. I will write it in the same section of the K-W-L Chart.”
“Great job! What I want everyone to do now is watch what I do and you will do the same.”

**Modeling the behavior:**
This activity will show what happens to a Saguaro cactus when it rain and during a drought.
(This is activity 1 of 2.)

**Check for comprehension:**
The partners will show each other how the Saguaro cactus reacts to rain and drought. The teacher will walk around the room watching for comprehension. For example: Are they using correct vocabulary tying in rain/drought times and reactions.

**Guided practice:**
This second part of the activity is to measure the difference in circumference of the engorged Saguaro compared to the Saguaro during a drought.

**Materials:**
Flexible rulers or tape measures
Fan Saguaro cactus (previously made)
Pencils
Handout for writing inches

Have students gather around the teacher at a desk to watch the measuring demonstration. When the class is gathered around, the teacher uses her expanded Saguaro (with his/her hand inside holding it out), and a volunteer to help model. The teacher asks the student to put his/her hand inside the Saguaro cactus and hold it open. The teacher will explain that in order to find out just how big around (circumference) the Saguaro cactus is, they will have to hold one end of the ruler or tape measure on the stapled edge. Continue going around the entire Saguaro with the tape measure until it meets the beginning, read the number on the ruler, and write that number in the:

Saguaro cactus full of water = _____ inches.

Model the measuring procedure again. Ask the partners to work together to complete this circumference measurement. The teacher will walk around to monitor and check for understanding.

When the partners have completed this measurement, gather the class around the desk again to watch the final measurement. When the class has gathered around, the teacher and volunteer will close the fan of the Saguaro cactus. The student will hold it closed while the teacher holds the end of the ruler or tape measure at the stapled edge and wraps it around until it reaches the other end. Read the number on the ruler and write that number in the:

Saguaro cactus during a drought = _____ inches.
Again, model the measuring procedure, ask the partners to work together to complete this circumference measurement. The teacher will walk around the classroom to monitor and check for understanding.

**Closure:**
When the partners have finished with the measurements, they will return with their completed handout to the floor where story time is. The teacher will ask different partners what measurements they got. The teacher will write the findings under the K-W-L Chart for everyone to see.

The teacher will ask:
1. Which group had the largest Saguaro?
2. Which group had the smallest Saguaro?
3. How many inches is the difference between the rain time and the drought time? (Pick a group for this question.)
4. Is it the rain time or drought time when the Saguaro is greatest in size?
5. Is it the rain time or drought time when the Saguaro is least in size?

Read the poem The Saguaro with the class.

**The Saguaro**
I live in the desert
Where the sun brightly shines,
I’ve got ridges and grooves
And a lot of sharp spines.

My roots don’t grow deep
But they spread far and wide,
To soak up the rain
That I’ll store deep inside.

My body starts swelling
Before the rain stops,
It swells and it swells
As I soak up each drop.

In times without rain
I get thinner each day,
As I use up the water
That I’ve stored away.

**Assessment:**
Evaluation will be by the following rubric:
Making the Saguaro cactus.
1 point – Followed directions/the Saguaro is folded fan-like and stapled.
0 points – The Saguaro wasn’t folded or stapled.
Completing the measurement worksheet.
2 points – The inches are completely written in.
1 point – The inches are partially written in (work not completed).
0 points – The inches are not written in at all.

Resources:
Cactus Hotel by Brenda Z. Guiberson
Illustrated by Megan Lloyd

Materials:
8 x 11 sheets of copy paper.
Stapler.

Students will find a partner to complete this project. Each group (2 students) will take 1 piece of paper and fold it like a fan. When the folding is done, they will bring the paper to me to staple the ends together.

The teacher will model how the Saguaro cactus engorges with water when it rains by putting his/her hand in the center of the fan circle and expand it (spread your hand out). Then as a drought comes, the Saguaro cactus gets thinner. This can be seen as the teacher squeezes the fan paper back together.

The cultural object I used in this lesson is the Saguaro Cactus. I chose this object because the Saguaro grows ins southern Arizona and northern Mexico.

Modifications for students with Disabilities:
The use of partners allows one-on-one help. The lesson and activities don’t have a time limit so students can work with ease. The teacher, walking around, is able to re-teach, answer questions and be within reach to help.

Saguaro Cactus Measurement Worksheet

Names: _______________________________.
Date: ____________________.

Saguaro cactus full of water = ____________ inches.

Saguaro cactus during a drought = ____________ inches.