Living Antiques: Saguaro

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Grade Level: 1
Duration: 2 class periods

National Standards
GEOGRAPHY STANDARDS
Element Three: Essential Element: Physical Systems:
8. The characteristics and distribution of ecosystems and biomes on Earth’s surface

NEXT GENERATION OF SCIENCE STANDARDS
1-LS3 Heredity: Inheritance and Variation of Traits
1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

Common Core Standards
ELA COMMON CORE
Reading
Informational Text
Key Ideas and Details
1.RI.1 Ask and answer questions about key details in a text.
Craft and Structure
1.RI.4 Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.

Writing
Text Types and Purposes
1.W.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.

Mathematics
Measurement and Data (MD)
1.MD.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps.

Other Arizona Standards
SOCIAL STUDIES STANDARDS
Strand 4: Geography
Concept 1: The World in Spatial Terms
PO 5. Locate physical and human features using maps, illustrations, images, or globes:
  a. physical (i.e., continent, ocean, river, lake, mountains, islands)
Concept 2: Places and Regions
PO 2. Discuss physical features (e.g., mountains, rivers, deserts) in the world.
PO 3. Recognize through images of content studied (e.g., Egypt, Arizona, local community) that places have distinct characteristics.
Science Standard
Strand 1: Inquiry Process
Concept 2: Scientific Testing (Investigating and Modeling)
PO 3. Use simple tools such as rulers, thermometers, magnifiers, and balances to collect data
PO 4. Record data from guided investigations in an organized and...
**Overview**

“The saguaro (sah-WAR-o) is the largest cactus in the United States, and it is only found in the Sonoran Desert of Arizona. Saguaro is very slow-growing and long-lived. A saguaro may grow only an inch per year, but can reach a height of 50 feet. A saguaro’s arms begin to form after it is about 15 feet tall and around 75 years old. The arms sometimes grow at odd angles, giving the cactus a misshapen appearance. An average old saguaro has five arms
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and is 30 feet tall. The average lifespan of a saguaro is approximately 150 years of age. The largest saguaros, with more than five arms, are estimated to be 200 years old. These plants often grow in dense saguaro “forests.” Saguars are unique living antiques; it is illegal to harm or remove those growing in the wild, and landowners must obtain a permit to relocate or destroy a saguaro plant on their property.” www.ArizonaEdventures.com

Purpose

In this lesson students will learn about the saguaro cactus and chart the growth of the saguaro cactus on a timeline, so they can appreciate how long the cactus lives. Students, especially those in the American Southwest, should know about these mighty plants and help to preserve their habitats. This lesson includes strategies for diverse learners.

Key Vocabulary

seed: the small part of a plant with flowers that grows into a new plant
saguaro: a cactus that has spines, white flowers, and red fruit, and may grow up to 50 feet tall
Sonoran: a desert in the U.S. and Mexico
desert: an area land that gets very little rain and can be covered with sand
fruit: the part of a plant that has the seeds in it
blossom: a flower

Materials

• The Seed and the Giant Saguaro by Jennifer Ward
• Science journals
• Timeline Drawing worksheets
• Sidewalk Pictures
• Saguaro Timeline and Answer Key
• Extension Activity with Scientific and Technology Images
• Colored chalk
• Scissors
• Rulers/tape measurers
• Kite string
• Sonoran Desert map
• North America map

Objectives

The student will be able to:
1. Recognize and describe a saguaro.
2. Locate the Sonoran Desert on a North America map.
3. Create a timeline.
4. Make and record observation in a science journal.

Procedures

Prerequisites: Students have been introduced to measuring and journal writing.

Prior to this session, color and then tape Sidewalk Drawings on area outside of classroom.

SESSION ONE

Engage:
1. To activate prior knowledge, have children contribute to a KWL chart (on the whiteboard or on chart paper) about the saguaro cactus that grows in the Sonoran Desert. Ask children to name some of the things they know about the cactus. Then ask them what they would like to learn about saguaros. As any vocabulary words are spoken in this discussion, put the word on the word wall and explain to all students what this word means. (Preparation: Linking to background and Linking to past learning)
2. Display the Sonoran Desert map. Explain how to locate the Sonoran Desert on the map. (Legend explains the shaded area delineates the Sonoran Desert.)
3. Now distribute the North America map to each student. Have them work as partners to locate and shade in the Sonoran Desert on their maps. (Application: Hands on)
4. Create a second KWL chart about the desert. Again introduce vocabulary words as they are spoken by the students. (Preparation: Linking to background and Linking to past learning)
5. Leave both KWL charts where the students can see them.

Explore:
1. Take students outside. Model measuring one of the saguaro stages of life by measuring out the
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string using the ruler or tape measure and marking with the colored chalk. Then cut the string. Show students how to lay the string from the edge of the sidewalk into the grass (dirt) next to the sidewalk. Then model how to draw on the Timeline Drawing worksheet the saguaro during this time of its life using the taped Sidewalk Drawings. Emphasize how carefully they need to look at the size of the man compared to the cactus and how many arms the cactus has at this life stage. (Scaffolding: Modeling, Comprehensible input)

2. Assign each set of partners a stage to measure and draw. (Remember to keep the students in order by 10, 20, 30 years, etc.) Distribute chalk, string and Timeline Drawing worksheets to partners Give time for partners to take their measurement, cut their string, lay the string out into the grass, and complete their worksheet. (Grouping Option: Partners)

3. Ticket Out the Door: Ask questions to each partner group. Questions can include vocabulary words from the lesson, how tall a saguaro would be in their assigned time period, what is a desert, and where is the Sonoran Desert. (Assessment: Individual or Group, Oral)

SESSION TWO

Explain:
1. Read and discuss the book, The Seed and the Giant Saguars by Jennifer Ward. Add to the KWL charts as they gain information from the book either about the saguaro or the desert. (Integrating Processes: Listening, Scaffolding: Comprehensible Input)

Elaborate:
1. If your school is near some saguaros, have students walk to this location and sketch a saguaro cactus in their science journal. If no saguaros are near the school, use pictures or videos related to the Sonoran Desert and have students do the same activity. Post the Sidewalk Pictures around the room. Have students estimate the age of the cactus and write facts about the saguaro in their science journal. (Application: Hands on and Promotes engagement) Again, as students discuss their observations, review vocabulary words from the lesson or add new words as they are mentioned on the word wall. (Integrating Processes: Listening, Scaffolding: Comprehensible Input)

Evaluate:
Have partner groups share their drawings in the correct order of the life stages of the saguaro with the class. (Assessment: Group, Oral) Each student should record the height of the cactus and the year on the Saguaro Timeline worksheet. (Assessment: Individual, Written)

Students should be able to write two to five sentences describing what they have learned about saguaros.

Assessment

Reading
Vocabulary test can be given. Mastery will be considered 80% or higher.

Oral responses on the Ticket Out the Door from Session One can be assessed as satisfactory or unsatisfactory.

Mathematics and Reading
Saguaro Timeline can be graded to see if students could record the measurements correctly according to the years.

Writing and Social Studies
Written paragraphs can be graded for content. More than four correct facts about saguaros will be seen as satisfactory.

Writing and Science
Science journals can be graded for a correct likeness of a saguaro and accurate observations.

Social Studies
Shading of North America map for Sonoran Desert can be graded for accuracy. Shading in the southwestern part of the U.S. and northern Mexico will be seen as satisfactory.

Extensions
Take images linked to scientific and technology inventions and give small groups a set of the photos. Have them work as a group to see if they can organize the events by “date” or by “years ago.”

Take images linked to scientific and technology inventions and organize them into a timeline that incorporates the saguaro (10 year saguaro would be about 1850, 20 year saguaro would be about 1870, etc., until you get to today’s date and the 150 year old saguaro.
Sources

Maps

- North America
  http://geoalliance.asu.edu/azga/
- Sonoran Desert
  http://geoalliance.asu.edu/azga/


Sidewalk Pictures illustrated by John Gallagher