# Air Dry Clay Cacti

## LESSON DETAILS

**GRADE LEVELS:** 3-5 (adaptations for 9-12) | **TOTAL TIME:** ~90 minutes

**CA STATE STANDARDS FOR VA:**
**5.VA:Cr2.1** Experiment and develop skills in multiple art-making techniques and approaches through practice.
**3.VA:Cr2.2** Demonstrate an understanding of the safe and proficient use of materials, tools, and equipment for a variety of artistic processes
**3.VA:Cr3** Discuss, reflect, and add details to enhance an artwork's emerging meaning.
**3.VA:Cn10** Develop a work of art based on observations of surroundings.

**LEARNING OBJECTIVES:**

1. Students will understand Helia Bravo-Hollis's contribution to cacti classification and botany in Mexico
2. Students will create a cactus sculpture using air-dry clay based on the native cacti of the area
3. Students will identify key characteristics of cacti through observation and discussion

**VOCABULARY:**

- **Botanist**: a scientist who studies plants
- **Sculpture**: a three-dimensional work of art
- **Form**: the three-dimensional aspect of an object such as its length, width, and height
- **Texture**: how something feels or looks like it would feel (rough, smooth, bumpy)

Plant Specific Terms

- **Column/Trunk/Stem**: The central part of the cactus (similar to the stem of most other plants) from which the various other parts of the cactus grow from
- **Areole:** Small, raised areas on the column of the cactus where parts of the cactus grow from
- **Glochid**: Like spines, these are modified leaf structures that are hair-like and barbed and help protect the cactus
- **Spine**: A modified leaf structure that is sharp and pointed and helps protect the cactus from the environment
- **Fruit:** A fleshy structure that retains water and contains the seeds of the plant
- **Species**: a group of plants, animals, or other living things that share the same characteristics and can reproduce with each other to make more of the same kind
- **Morphology:** The study of the physical form and structure of plants
- **Anatomy:** The study of internal structures and organization of plants

**LESSON PLAN OVERVIEW:**

This lesson invites students to deepen their understanding of cacti by introducing them to the scientific research of cacti and by having them explore the physical characteristics of cacti through the creation of clay sculptures. The lesson begins with a brief overview of Hleia Bravo-Hollis and her work on cacti research followed by a brief introduction to cacti and their identifiable features. Then, students will be introduced to the native cacti species of Southern California either by exploring the garden or being shown pictures. Students will choose a cactus that they like and recreate it using air-dry clay. Students will explore the physical characteristics of their chosen cactus through their sculpture. If time permits, students can begin to start painting their cactus and discuss what aspects of their chosen cactus makes it different from others.

## MAIN ACTIVITY

**ACTIVITY BREAKDOWN:**

Introduction (10 minutes)

- Brief introduction to who Helia Bravo Hollis is and her importance in Mexican botany
    - Video/broadcast explanation of Helia Bravo Hollis Cultivators: Helia Bravo Hollis | Womanica (starts at 1:00)
    - Simpler and shorter explanation but in Spanish Helia Bravo Hollis
- Emphasize her being the first female to study biology in Mexico and the contributions she made towards the study and conservation of cacti in Mexico
- Talk about how cacti come in a variety of shapes and sizes and how we can explore those qualities using art, in this case clay sculpture
- Introduce basic parts of a cactus and their function
    - Short video explanation of basic cacti anatomySan Pedro Cactus Anatomy 101 [Columnar Cactus Anatomy Basics]

Cacti Observation (10-15 minutes)

- Allow students to explore the garden to look at various cacti and ask them to choose one cactus that especially draws their attention. If need be, images of native cacti or potted ones can be provided for students to observe.
- Encourage students to pay attention to the shape of the cacti and to identify any unique features

Gelli Print Process (~30 minutes)

A video demoing how to create cacti from air-dry clay. Includes various examples of cacti shapes, how to stick pieces of clay together, and how to color the finished sculpture Air Dry Clay Cactus Plants | Easy & Fun DIY Clay Project

Scientific Connection and Exploration (10-15 minutes)

- Have students label their cactus sculpture with the common or scientific name of it if possible
- Have students discuss the various parts of their chosen cactus that makes it unique using cacti anatomy terms and have them describe the overall shape and structure of it

Critique (10 minutes)

- Ask students about their experience observing cacti and recreating them using clay

(refer to Check For Understanding for example questions)
- Ask students to comment on their work and those of their peers

Clean-Up (10 minutes)
- Have students help in cleaning up the work area
- Explain how cleaning and maintaining art tools is important to ensuring that they last and can continue to be used

**ADAPTATIONS**
Shorter Time Frame
- Potted cacti or pictures of them can be provided in place of garden exploration
- Painting the sculptures can be omitted/done at a later time
- Colored air dry clay may be used in place of having students paint their sculpture
- Discussion and critique can be skipped if time is really restricted

For Higher Grade Levels (6-12)
- Students can be introduced to more complex cacti structures and be asked to identify them or include them in their sculpture
- Students can be asked to create multiple sculptures of cacti with varying morphology
- Students can be asked to reflect on the connections between environment, identity, and creativity
- Students can be asked to write a fictitious field journal entry about their cacti

**MATERIALS:**
- Air-dry clay
- Rubber/wooden sculpting tools
- Water and paint brushes
- Scrap paper
- Watercolor/acrylic paint
- Aluminum foil (optional)

**RESOURCES:**
Short biography on Helia Bravo Hollis
Helia Bravo-Hollis | Science History Institute

Simple breakdown of cacti morphology
Cacti Morphology: The Key Parts of a Cactus

In-Depth Intro to Cacti
Cactaceae

Other videos of people making cacti with air dry clay

## LEARNING OUTCOMES AND ASSESSMENTS

**STUDENT LEARNING OUTCOMES:**
1. Students will describe who Helia Bravo-Hollis was and summarize her contributions to botany
2. Students will identify and describe key physical features of cacti
3. Students will create a three-dimensional cactus sculpture using air-dry clay
4. Students will reflect on the importance of diversity in science

**CHECK FOR UNDERSTANDING:**
Questions relating to science and cacti

- Who was Helia Bravo-Hollis and what was she known for?
- What did you notice about cacti that you hadn't before?
- What makes cacti different from other plants?
- What parts of the cactus were you able to sculpt?

Questions relating to art

- What texture and form does your sculpture have?
- What was the hardest part of sculpting your cactus? What was the most fun?
- How did you choose the shape or design of your cactus?

For higher grade levels (6-12)

- What did you learn about cacti that you didn't know before?
- What parts of your cacti make it distinct from other cacti?
- How could you balance creativity and accuracy in plant documentation?
- Can you name or describe the real cactus species that inspired your sculpture?
- How does knowing about Helia Bravo-Hollis change how you think about science and who does it?

**IMAGES:**
Example cacti sculptures
Air Dry Clay Cactus Plants | Easy & Fun DIY Clay Project

DIY Air Dry Clay Cactus Plants - YouTube

[How to make an Air Drying Paper Clay Cactus Pot using Magiclay over a Simple Armature]
(made using pre-colored clay)