

Creating a School Herbarium



Objective:

Students will:

- Identify common plants
- develop an awareness of plant diversity
- create a herbarium

Author

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adapted from: <http://askbiologist.asu.edu/expstuff/plantpress/herbarium.html>

Time

Collecting & Pressing time = 30-90 min. Drying time = minimum of 1 week

Grade Level

3-12

Standards:

AZ Science Standards

Life Science

See page 2 for list

Background:

As an ecologist observing vegetation patterns in your schoolyard, you may have trouble identifying all the plants. It may require more careful examination and time with reference books and a hand lens inside the classroom. Perhaps you would like to compare the leaf shapes or flower structures of a few plants from different natural sites. Maybe you would like to compare the height or leaf size of garden plants you grow from one season to the next. Other students, teachers or parents at your school may want to learn about the plants you have observed.

The best way to observe a plant specimen closely and preserve it for others is to press and dry it. The Arizona State University Vascular Plant Herbarium is the second largest in the Arid Southwest with over 287,000 specimens. This collection allows researchers to go back in time to study plants. The Herbarium has plants that were collected as far back as 1877. Collecting a few samples to answer specific questions can help you learn about plants and their environments.

Vocabulary:

herbarium: a collection of pressed, dried, and mounted plants referenced in space and time.

Materials:

For each team:

- pruners (scissors)
- field plant guide or plant classification key
- plant labels (attached)
- pencils
- plant press (with news print) or phone book (with tissue paper, newspaper)
- sealable plastic bags
- glue
- small paint brush

Advanced Preparation

Obtain permission to collect samples from public places.

Recommended Procedure:

Engagement:

- 1) Brainstorm with kids various ways that we can share information about plants that are found in their schoolyard. Do they know all the plant names? How do scientists share information about plants with scientists from other parts of the world?

Exploration:

- 2) Assign students to small groups giving each student a specific task.(i.e. collector, recorder, materials handler, plant identifier)
- 3) Explain scientific questions and the purpose for collecting chosen plants. Remind

students to be gentle with specimens and conservative in the size and number of samples (particularly in natural areas).

- 4) Direct teams to specific collection area with the following materials: pruners, plastic bags, pencils, reference books or classification key, and plant labels.
- 5) Have students collect samples of each chosen plant species in their specified area.
 - A. place each sample in a plastic bag
 - B. on plant label, record common name, location and date collected
 - C. place label in baggie with sample then seal shut
- 6) Have students use a plant press or phone book to press all specimens. (*Both methods are listed below.)

Drying time varies dependent on climate. (Specimens will dry in 1-2 weeks in a hot, dry climate.)
- 7) While specimens are drying, have students complete the remaining portion of the plant labels.
- 8) Remove all dried specimens from the press then match each with the appropriate plant label.
- 9) Use diluted glue and a paint brush to mount specimens and labels to white paper. Pages may be laminated to form a book or placed under glass for display.

***Plant press method: (Stack items in the following order.)**

- 1) Wood base (on bottom)
- 2) Corrugated cardboard
- 3) Acid-free paper
- 4) News print
- 5) Plant specimen
 - Press down keeping the natural form of leaves
 - Arrange flowers for display
 - Keep seeds or fruit in a spate envelope for display later (do not press)
 - Record common name of plant on news print next to specimen
- 6) news print
- 7) acid-free paper
- 8) corrugated cardboard

9) repeat steps #2-8 until all specimens are mounted

***phone book method:**

- 1) Place plant specimens randomly in phone book so they are evenly distributed
- 2) Place tissue paper on both sides of specimen
- 3) Use post-it notes to bookmark and record common name.
- 4) Place weight on top of phone book and leave until thoroughly dry.

Plant Resource Books:

Bowers, Janice Emily, Shrubs and trees of the Southwest Deserts

Epple, Anne Orth, A Field Guide to the Plants of Arizona

Sunset, Western Garden Book

Evaluation:

Students will make neat pressed specimens and complete labels accurately.

Extensions/Expansion:

Follow up with initial scientific questions by carefully identifying the species of collected plants and observing subtle differences in structures.

Variables you might want to record and measure for each plant include: height, leaf shape, length and width, leaf hairs, waxy coating, color, flower size and shape, root length, root shape, root hairs, root to shoot ratio, herbivore damage, arthropod evidence, galls.

Variables you might want to record and measure for each collection location include: shade/sun, ground cover, soil type, soil moisture, soil /air temperature, nearest neighbor plant.

Some questions you might try to answer include:

- 1) What is the variation in certain plant traits among different species in the same area? For example: How do shrub leaves differ from cactus "leaves"
- 2) What is the variation in certain plant traits within species? In the same area? In different habitats? For example: How does average leaf size differ for brittle bush collected in an urban schoolyard compared to a rural roadside?

3) How do certain abiotic factors relate to certain plant traits? For example: Are leaves larger or smaller in shady areas compared to sunny areas?

Standards:

Arizona Standards:

S1-C2-GR3-HS-PO1

S4-C1-GR3-4-PO1

S4-C1-GR6- PO6

S4-C2-GR3-PO1

S4-C3-GR3-PO5

S4-C3-GR3-4-PO4

Student Worksheet

Herbarium Labels



Common Name	
Scientific Name	
Date Collected	
Location	
Collector's Name	

Common Name	
Scientific Name	
Date Collected	
Location	
Collector's Name	

Common Name	
Scientific Name	
Date Collected	
Location	
Collector's Name	

Common Name	
Scientific Name	
Date Collected	
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Collector's Name	

Common Name	
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