

Arizona Grown Specialty Crop Lesson Plan

Where Do They Go?



LEVEL: 10-12

SUBJECTS: Science, Environmental Science

AZ ACADEMIC STANDARDS: SCHS-S4C3, SCHS-S4C5

MATERIALS

Reference books (see credits), landscape design books, computer programs, local city water guides, scrap paper, plain paper, graph paper, (8x10) cardboard, and pieces for model, which can be obtained from a hobby store: (miniature houses, plants, shrubs and trees), plant list, landscape rubber stamps with ink pad (shows top view images for plants).

Optional: Computer programs to plot out new designs: Sunset Western Garden CD-ROM. Walk around the neighborhood to observe poor to excellent examples of landscape designs for each home. View homes from the road so you are not trespassing.

VOCABULARY

tree, shrub, vine, ground cover, xeriscaping, bulbs, annuals, native plants, hedges, lawn substitutes, special use plants, bedding/border plants, biotic, abiotic, deciduous, non-deciduous, perennials.

RELATED LESSONS

If it Smells Good, is Edible and Attracts Wildlife, Then it's a Practical Garden!
Don't Wait, Just Propagate!

Let's Make Stew

How do Plants Make Food?
Survival of the Fittest
Getting to the Root of the Matter
This Can't be a Plant
Soggy Seeds
Plant Seedling
Plants, Plants and More Plants

SUPPORTING INFORMATION

Most people do not have a plan when they begin to landscape their home. We can observe poor planning as the plants mature, and grow out from their intended space. Some potential problems are: trees growing too close to power lines, sidewalks, and driveways, home roofs, plants that cover meters that need to be read, poisonous and prickly plants in high traffic areas, plants that lose their leaves (deciduous) near/in the pool, plants overhanging into the street or neighbor's yard, plants that people are highly allergic to, and plants that drop messy fruit. Knowing the life-span/growth cycle, etc. of landscape plants will allow property owners to decorate with beautiful plants while enjoying the correct plant in the appropriate spot. A positive example could be a vine which covers the west side of a home. This vine functions as a wall cover as well as cools the house from the intense afternoon sun. Another example of plant use could be spiny plants to prevent criminal entry. Refer to the references listed which includes

BRIEF DESCRIPTION

Students will create, design, then draw (2-D), and produce a 3-D model of a complete landscape package for a home within zone 13 (Sunset Western Garden Book).

OBJECTIVES

To select an imaginary plot of land to develop.
To select correct landscape plants to use for the chosen zone.
To observe many landscape designs to show proper planning.
To determine placement of plants based on predictions of final plant height.
To design a landscape with a purpose/theme.

ESTIMATED TEACHING TIME

Two-three weeks.
Give students class time to work two-three days/week.

SUPPORTING INFORMATION (cont'd)

plants for the homeowner to choose. Landscape plants that are xeriphytic can be used as a theme for many areas with water concerns. Landscaping with structures such as gazebos, patios, arbors, spas, can enhance gardens, but are costly. Remember to consider legal restrictions regarding property lines, height limitations and building restrictions. Also check with your planning department, utility and water company, as well as your homeowners association. Prior checking with the zoning laws, utility easements, and your neighbors will help to prevent any legal issues. The exposure of the NSEW of the lot, soil conditions, and topography play heavily when planning this project. Light exposure determines where sun-loving plants go and where shade plants need to be.

The living organisms in this landscape plan are called biotic. They are dependent on the non-living portion of this newly created environment called abiotic. These abiotic factors include: water, sunlight, moisture, climate, soil, elevation, topography, wind. Together, the biotic and abiotic factors make up the environment.

GETTING STARTED

(Quantity of Materials)

Class set of reference books, 1 set of landscape garden rubber stamps. Students make their own plan: individual paper, graph and plain paper. Build 3-D model on cardboard. Gravel, Q-tips, and cardboard to cut and glue. Items to be used that represent plants, shrubs, trees, and structures.

PROCEDURES

Now it is your turn to be creative to design and build a 3-dimensional model using landscape ideas for your new home. The lot you will use will be regular in size (approximately one square acre). Keep in mind the following: Design for real use living and enjoyment, and keep in mind, landscapes that are lower in maintenance results in less work and more recreation.

Select the zone you are designing for by using the Sunset Western Garden Book and find the map of your state. Locate the zone number on the map which is near your city. This number distinguishes which plants are successfully grown in that area due to the abiotic conditions. Make a list of plants with different purposes to be used in the landscape plan. Use at least 26 plants, taking some from each plant selection guide.

Draw the house as it will appear on the lot, and begin to add in the selected plants to be used. Develop a "key" system to denote each plant type, so it can be easily identified. Complete this on scratch paper. This is a rough draft.

Once completed, transfer this drawing over to graph paper of the same size. This step will give the property some scale. If available, use landscape stamps which show realistic placement of plants (see diagram).

The final step is to build the final three-dimensional project by constructing the project from the plans you have developed. Use thick poster board as the base for the project. Be creative when depicting plants and structures in this model. Use common items to represent plants (Q-tips, clay, gravel,

etc.). Have a key available for easy identification.

EVALUATION OPTIONS

What are some of the limitations of your project?

(Some possible answers: cost, size of lot, models used to make 3-D final project are not to scale)

How could you have improved your design and choice of plants? Any plant placement changes?

(Individual student answers)

List some of the abiotic factors that impacted your decision to place plants in certain locations. State the environmental factor you compensated for with the correct plant. (answers vary)

Provide a copy of your landscape plan complete with a key to all of the plants, so anyone could understand how your ideas are mapped out. (answers vary)

List the places you have observed to get ideas for your project. (answers vary)

State the theme that your project promotes. Could you combine themes? (answers vary)

EXTENSIONS AND VARIATIONS

-Use different zones to accomplish the new 3-dimensional model.

Remember to use plants that are consistent with the region's abiotic factors (different zones, different plants).

-Use an irregular lot size based on one acre.

-Use a small lot size to create a landscape that is appealing.

-Show the neighborhood parents your project, and ask them if they would like a new landscape plan or some improvement for their existing home area. This could lead to extra money for the young landscape designer.

-Visit a landscape architect's firm.

-Visit a local architecture school.

RESOURCES

American Stamp Co.
12290 Rising Road
Wilton, CA 95693-9656
(Student Landscape Design Kit)
City of Phoenix
Water Conservation Office
200 W. Washington, Ste 800
Phoenix AZ 85003
(602) 261-8367
www.amwua.org

Arizona Game and Fish Dept.
2221 W. Greenway Rd.
Phoenix AZ 85023
(602) 942-3000
www.gf.state.az.us

Desert Botanical Garden
1201 N. Galvin Parkway
Phoenix AZ 85008-3490
(480) 941-1225 www.dbg.org

Boyce Thompson Arboretum
37615 U.S. Highway 60 @
Milepost 223, Superior AZ
(520) 689-2811 (recording)
(520) 689-2723 (operator)
<http://cals.arizona.edu/BTA>

ASU Arboretum
Main Campus, Tempe AZ
(480) 965-8467

MCC Demonstration Garden
Mesa Community College
1833 W. Southern Ave
Mesa, AZ 85202
(480) 461-7000

U of A
Cooperative Extension,
Maricopa County
4341 E. Broadway, Phoenix
AZ 85040 (602)470-
8086x317
<http://cals.arizona.edu/agliteracy>

Arizona Native Plant Society
PO Box 41206 - Sun Station
Tucson, AZ 85717

Magazines

National Gardening
PO Box 51106

Boulder, CO 80323-1106
Organic Gardening
PO Box 7583
Red Oak, IA 51591-2583
Horticulture
PO Box 51455
Boulder, CO 80323-1455

EDUCATORS' NOTES

CURRICULUM DESIGN

Barry L. Feldman Grade 10 - Science Corona del Sol High Tempe Union High School District
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Vocabulary Definitions

Tree - A woody perennial plant having a single, usually elongated, main stem generally with few or no branches on its lower part.

Shrub - A low usually several-stemmed, woody perennial plant.

Vine - A plant whose stem requires support and which climbs by tendrils or twining or creeps along the ground.

Ground Cover - A planting of low plants that covers the ground in place of turf.

Xeriscaping - The planting of low water use drought tolerant plants usually in a desert region where water is scarce and needs to be conserved.

Bulbs - An underground bud that sends down roots consisting of a short stem, covered with leafy scales which develop into a new plant.

Annual - Completing the life cycle in one growing season from seed to mature plant to seed.

Perennial - A plant that persists for several years usually with new growth each year.

Native Plants - Plants that are growing, and have always grown, in an original or indigenous habitat.

Hedge - A fence or boundary formed by a dense row of shrubs or low trees.

Lawn Substitutes - Plants that can be used in the landscape in place of the traditional grass lawn.

Special Use Plants - Plants selected for their functionality and hardiness when used in the landscape. Criteria for plant choices may be from aroma, culinary, or shade.

Bedding/Border Plants - These plants are grown for their ability to cover the ground or bare spaces in the garden (ground cover). These plants may be showy as they spread across the ground.

Biotic - All of the living organisms within an environment.

Abiotic - All of the non-living components of an organism's environment: temperature, climate, humidity, elevation, exposure, sunlight, water, soil.

Deciduous - A plant which loses its leaves within a course of the season, and re-grows them for the next season.

Non-Deciduous - Plants which keep their leaves all season and appear green throughout the year.

Plant List (some suggestions)

Trees - Arizona Ash, Blue Palo Verde, Foothill Palo Verde, Desert Willow, Ironwood

Tall Shrubs - Barberry, Catclaw, Desert Hackberry, Desert Lavender, Gray Thorn

Small Shrubs - Brittlebush, Bush Dalea, Chuparosa, Fairy Duster

Cactus & Succulents - Agave, Cholla, Prickly Pear, Saguaro

Flowers - Blackfoot Daisy, Blue Grama Grass, Desert Marigold, Globe Mallow, Lupine, Penstemon, Sunflower

ZONE 12

Herbs

1. Spanish Broom - *Genista Hispanica*
2. Hyssop - *Hyssopus officinalis*
3. Thyme - *Thymus*
4. English Lavender - *Lavandula angustifolia*
5. Cloth of Gold - *Crocus angustifolius*

Flowers

6. Bougainvillea - *Nyctaginaceae*
7. Dahlia - *Compositae*
8. Fatshedera - *Araliaceae*
9. Gardenia - *Rubiaceae*
10. Impatiens - *Gramineae*
11. Lilly - *Liliaceae*
12. Lotus - *Nymphaeaceae*
13. Oenothera - *Onagraceae*
14. Poponeya - *Papaveraceae*
15. Watsonia - *Iridaceae*
16. Yarrow - *Compositae*

Bush

17. Vauquelinia - *Rosaceae*
18. Xyloyma - *Flacourtiaceae*
19. Kochia - Summer cypress

Tree

20. Acer - *Buergerianum*
21. Juniper - *Cupressaceae*
22. Melianthus - *Melianthaceae*
23. Quince - *Rosaceae*
24. Umbellularia - *Lauraceae*

Vine

25. Philodendron - *Araceae*

Ground Cover

26. Zoysia - *Gramineae*