

Lesson Three: The Secrets of Orchids Elementary

Lesson One: Introduction to Biomimicry provides the foundation for the remaining five lessons in this “Biomimicry” unit. “The Secrets of Orchids” (as well as Lesson Two) is the elementary visual arts lesson of the unit. Lesson Three - Secondary (as well as Lesson Two) is the secondary visual art lesson of the unit.

Objectives

1. Students will be able to create drawings using bilateral symmetry.
2. Students will be able to create different values with watercolor and oil pastels.
3. Students will be able to organize visual elements (size, overlap, warm and cool colors) within a complex composition in which at least one shape crosses the edge.
4. Students will be able to write an artist's statement to accompany a painting.

Preparation

Preview “The Secrets of Orchids” PowerPoint. Print out multiple copies of orchid flower photos with simple petals and colors (rather than flowers with color patterns or frilly petals) and photos that show orchid roots. Cut petal templates that can be flipped to trace right and left orchid petals. Consider whether to laminate orchid photos and petal templates for repeated use.

Resources and Supplies

[The Secrets of Orchids PowerPoint](#)

6”X11” cardstock (folded in half to make book cover)

5 1/2”X18” 80 lb paper (folded to make book pages)

gluesticks

labels for sketchbooks pdf

OPTIONAL: Ribbon to tie book closed

pencil and eraser

thin markers

print-outs of orchid flowers and roots from the Internet

petal templates

oil pastels

watercolor paper 7 ½ X 11

water cups/water/paper towels

paint brushes

Activities

DAY ONE

Review: Review the theme in life that “Plants and animals have developed amazing ways to solve problems so they can live and thrive”, the theme in science that “Scientists identify problems in today’s world and explore sustainable solutions already working in the lives of plants and animals” and the theme in the arts that “Visual, performing and literary artists fascinated by the amazing abilities of plants and animals find exciting problems for their creative work.”

Review the unit’s key questions:

What inspiration can I find in nature for my own artwork?

What visual elements will I use (bilateral symmetry, warm and cool colors, size and overlapping)?

Introduction and Assignment: Display The Secrets of Orchids PowerPoint slides 1-14 to:

- Explain how 1) people enjoy and use orchid, 2) scientists have solved an important problem by studying orchids and 3) artists have found inspiration for their art from nature (slides 1-2).
- Show some of the beauty of orchids (slide 3).
- Explain how orchids hang on to trees with their roots (slide 4 & 5).
- Note that we get vanilla flavoring from a special orchid bean (slide 6).
- Explain that some orchids (called epiphytes) get their nutrition from their air roots (slides 7-9).
- Show how parts of an air root gather water and how scientists imitated orchids to solve a water shortage in Africa (slides 10-12).
- Then, show an example of how an artist got an idea for his sculpture from nature (slide 13).
- Introduce students to their art assignment (slide 14).

Definition and Practice: Display The Secrets of Orchids PowerPoint slides 15-23 to:

- Illustrate steps in making a sketchbook to study orchids (slide 15-17).
- Define bilateral symmetry (slide 18).
- Practice identifying and analyzing bilateral symmetry in flowers (slides 19-22).
- Direct students to look at photos of orchids as they draw a bilaterally symmetrical orchid flower on page 1 of their sketchbooks (slide 23).

DAY TWO

Definitions and Planning: Display The Secrets of Orchids PowerPoint slides 23-29 to:

- Ask students to continue their study of orchids by drawing overlapping orchid roots on page 2 (slides 23-24).
- Define gradual value change (slides 25 & 26).
- Ask students to use pencil and oil pastel on page 3 (slide 27).
- On the last page of their sketchbooks, ask students to plan their final painting with bilateral symmetry, gradual value change, changes in scale, a shape crossing the edge of the paper and contrasting warm and cool colors (slide 28-29).

DAYS THREE AND FOUR

Final Assignment: Display The Secrets of Orchids PowerPoint slides 30-36 to:

- Ask students to refine their sketchbook plans for their paintings as they draw orchids on a sheet of watercolor paper (slide 30).
- Next, ask students to trace their drawing with oil pastel using lighter pressure to create lighter values (slides 31 & 32).
- Ask students to add more value with watercolor (slide 33).
- Direct students to finish their paintings by adding contrasting warm and cool colors (slides 34 & 35).
- Finally, ask students to write an artist statement about what they learned about orchids or about how they solved their artistic problem in their paintings (slide 36).

Art Vocabulary

bilateral symmetry

value

gradual value change

Other Vocabulary

epiphyte

nutrition

air roots

Extension Ideas

Read the Kyrene de la Paloma Elementary School Biomimicry Report for ideas about how to collaborate with arts teachers and classroom teachers and perhaps other community organizations, such as an art center, university, or wildlife rescue group.

Consider introducing students to artists inspired by flowers, such as Georgia O’Keeffe, Vincent Van Gogh and Jan van Huysum.

Assessment Guides

OBJECTIVE 1: Students will be able to create drawings using bilateral symmetry.

Exceeds Expectations: Multiple orchid flowers have clear bilateral symmetry.

Meets Expectations: At least one orchid flower has clear bilateral symmetry or several show some similarity between right and left sides.

Approaches Expectations: At least one orchid flower shows similarity between right and left sides.

Fails to Meet Expectations: Painting shows orchid/s.

OBJECTIVE 2: Students will be able to create different values with watercolor and oil pastels.

Exceeds Expectations: Painting includes even transitions in value change throughout, in flowers and elsewhere, for example in stems or roots or background colors.

Meets Expectations: Painting includes gradual value change in all flowers.

Approaches Expectations: Painting includes several values and some gradual value change.

Fails to Meet Expectations: Painting includes at least two values.

OBJECTIVE 3: Students will be able to organize visual elements (size, overlap, warm and cool colors) within a complex composition in which at least one shape crosses the edge.

Exceeds Expectations: Painting is organized with all four of the following: changes in size, overlapping, warm and cool colors and shape/s crossing the edge.

Meets Expectations: Painting is organized with at least three of the following: changes in size, overlapping, warm and cool colors and shape/s crossing the edge.

Approaches Expectations: Painting is organized with at least two of the following: changes in size, overlapping, warm and cool colors and shape/s crossing the edge.

Fails to Meet Expectations: Painting is organized with at least one visual art element or a shape that crosses the edge.

OBJECTIVE 4: Students will be able to write an artist's statement to accompany a painting.

Exceeds Expectations: Artist statement includes the student's name, a distinctive title and a thoughtful sentence related to student's learning or decision making.

Meets Expectations: Artist statement includes the student's name, a title and a sentence related to student's learning or decision making.

Approaches Expectations: Artist statement includes two of the following: the student's name, a title or a phrase related to student's learning or decision making.

Fails to Meet Expectations: Artist statement includes the student's name or a title or a phrase.