The Secret Life of Flowers: A Botanist's Workshop

Materials Needed:

- A large, simple flower for dissection (a lily, tulip, hibiscus, or alstroemeria works well)
- Magnifying glass
- A paper plate or white sheet of paper to serve as a workspace
- Tweezers (optional, but helpful)
- Tape
- A blank piece of paper labeled "Flower Anatomy"
- Art supplies: drawing paper, colored pencils, markers, or crayons
- Optional for Pollinator Game: A small pom-pom, a bit of glitter or yellow powder (like cornmeal), and a cupcake liner

---

Lesson Details

Subject: Science (Botany), Art

Grade Level: 4th-5th Grade (Age 10)

Time Allotment: 90 minutes

Learning Objectives

By the end of this lesson, the student will be able to:

1. Carefully dissect a flower and identify its primary reproductive parts (stamen, pistil) and attractive parts (petals, sepals).
2. Explain the function of each main flower part in the process of pollination and reproduction.
3. Design a unique, imaginary flower adapted for a specific environment, justifying the function of its creative features.

Lesson Procedure

Part 1: The Flower Explorer (30 minutes)

This is a hands-on investigation to discover what's inside a flower.

1. **Initial Observation (Hook):** Place the flower on the paper plate. Ask the student: "Before we look inside, what do you notice on the outside? What is its job? Why do you think flowers are so colorful and smell nice?" This encourages curiosity and connects to prior knowledge.
2. **Guided Dissection:**
    - **Sepals:** Gently peel back the small green leaves at the base of the flower bud. These are the **sepals**. Their job was to protect the flower when it was a bud. Tape one onto the "Flower Anatomy" paper and label it.
    - **Petals:** Next, carefully remove the colorful **petals** one by one. Ask: "What is the job of these bright petals?" (To attract pollinators like bees and butterflies!). Tape a petal onto the paper and label it.
    - **Stamen (The Male Part):** You should now see stalk-like structures inside. These are

the **stamens**. At the very top is the **anther**, which is covered in a powder called **pollen**. Let the student gently touch the anther and see the pollen on their finger. Explain that this pollen is key to making a new seed. Carefully remove one stamen, tape it to the paper, and label "Stamen (Anther and Filament)."
    - **Pistil (The Female Part):** In the very center, there is one main structure remaining. This is the **pistil**. The sticky top is the **stigma** (its job is to catch pollen), and it leads down through the **style** to the **ovary** at the base. Explain that this is where the seeds will grow once pollen arrives. Remove the entire pistil, tape it to the paper, and label "Pistil (Stigma, Style, and Ovary)."
3. **Review:** Look at the completed "Flower Anatomy" sheet together and review the job of each part.

Part 2: The Pollinator's Journey (15 minutes)

Let's simulate how these parts work together!

1. **Setup:** Place the cupcake liner on the table (this is our "flower"). Sprinkle a little glitter or cornmeal inside (this is our "pollen").
2. **The Bee:** The student's pom-pom is now a bee. Have the "bee" fly into the flower to get some tasty nectar. As it does, it gets covered in "pollen" (the glitter).
3. **Pollination:** Now, have the bee fly to an imaginary second flower (or just the center of the first flower, representing the pistil). As it lands, some of the glitter will fall off. Explain: "You just did it! You moved pollen from the stamen to the pistil. That's **pollination**! Now the flower can start making seeds."

Part 3: Design-a-Superflower (35 minutes)

This is the main creative project where the student applies everything they've learned.

1. **The Challenge:** "You are a world-famous botanist who has discovered a new environment! Your job is to design a brand-new flower that can perfectly survive and thrive there."
2. **Choose an Environment:** Have the student pick or invent an environment. Examples:
    - A dark cave where the only pollinators are bats.
    - A windy mountaintop with very few insects.
    - An underwater world where fish help pollinate.
    - A planet made of candy.
3. **Create the Flower:** Using the art supplies, the student will draw their "superflower." They must think critically about adaptation.
    - How will it attract its pollinator? (Glow-in-the-dark petals for the cave? No petals at all for the windy mountain, relying on wind to carry pollen?)
    - How will its stamen and pistil work? (Are they extra long? Super sticky?)
    - What special features does it have for protection or survival? (Armor-like sepals? Roots that grab onto rock?)
4. **Label and Explain:** The student should label the key parts of their flower (even if they look very different) and write 2-3 sentences at the bottom of the page explaining how their flower is perfectly adapted to its environment.

Assessment & Wrap-Up

Assessment (10 minutes)

The learning is assessed through a "Show and Tell."

- The student presents their "Superflower" design.
- They should point to the main parts and explain their function, connecting each feature to the challenges of the chosen environment.
- **Checklist for Success:**
  - Did the student include parts that function like petals, stamens, and a pistil?
  - Is the explanation for the flower's adaptations logical and creative?
  - Can the student correctly use vocabulary like 'pollination,' 'pollen,' and 'petals' when explaining their creation?

Differentiation and Extension

- **For Extra Support:** During the design phase, brainstorm ideas together. Use the dissected flower as a direct reference, asking, "How could we change this petal to work in a cave?"
- **For an Extra Challenge:** Have the student invent a specific pollinator that co-evolved with their superflower. They can draw the pollinator and explain how its body parts are perfectly suited to get pollen from their unique flower design. Another idea is to press the dissected flower parts in a book to preserve them.