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# K-12 Partnership Lesson Plan

# Raffica La Rosa

# *What’s the Buzz?*

# *Matching plants to their pollinators*

## Overview

Students will learn the common types of pollinators. They will then learn the characteristics of flowers that allow the flowers to attract and utilize particular pollinators. Students will then go outside to put their predictions to the test by observing plants and their pollinators.

**Objectives**

At the conclusion of the lesson, students will be able to:

* Learn some of the common types of pollinators
* Notice more details of plants with which they come into contact
* Be able to predict what pollinates each plant species
* Learn that even though flowers look very different from one species to another, they still share some characteristics that allow them to be pollinated by similar types of pollinators

**Length of Lesson**

30 min- learning the different floral traits and looking at sample flowers

 30 min- going outside and observing pollinators

**Grade Levels**

5-8

**Standards covered (NGSS)**

Disciplinary Core Ideas:

 *Elementary*

* **4-LS1-1**: construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction

*Middle School*

* **MS-LS2-2:** construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems
* **MS-LS1-4**: use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively

Cross Cutting Concepts:

* Patterns
* Structure and function

Science and Engineering Practices

* Constructing explanations and designing solutions

**Materials**

* Powerpoint highlighting each pollinator and the traits that attract them
* Handout
* Sample flowers that can be picked from outside or picked up from a local florist or greenhouse. You can try getting broken flowers that the florist is unable to sell for a reduced price or free (avoid getting flowers that look like they’ve had a lot of artificial selection and no longer resemble a flower that could be found in nature). Flowers that are good are lilies, purple irises, daises, and orchids.

**Background**

 There are many species of plants in the world and most of them are pollinated by animals. People have made lists of plant characteristics, such as color, shape, and scent that attract specific pollinator groups. Using these rules of thumb, one can predict what pollinates a given flower. The pollinators we highlight are: bees, moths, butterflies, flies, beetles, bats, birds, and the wind. The characteristics that predict these pollinators are:

* + bees: yellow and blue/purple, nectar guides, scent doesn’t matter, flat open flowers or bilaterally symmetric (like our faces), pollen or nectar rewards
	+ moths: light colored, scented, narrow tube, nectar reward, blooms in the evening/night
	+ butterflies: pink, orange, or lavender, scented, flat landing area, nectar reward, narrow tube or nectar spurs
	+ flies: maroon/brown/white mottled to resemble rotting meat, smelly
	+ beetles: green or white, heavily scented, dish shaped, lots of pollen and plant parts to feed beetles
	+ bats: white, strong scent, trumpet shaped, nectar reward, blooms at night
	+ birds (hummingbird): red, scentless, tub shaped, nectar reward, reproductive parts sticking out beyond the petals (exserted)
	+ wind: green or whitish, lots of pollen, easily moved by the wind (i.e. grasses, corn tassels)

### Activities of the session

1. Hand out copies of the 2-sided activity sheet
2. Show a diagram of a simplified flower and point out where the pollen is stored (anthers) and where it will be deposited (stigma)
3. Ask for a definition of “pollinator”
4. Ask students to say types of pollinators
5. Once you’ve made a list, go through the slides to show them what characteristics can attract those types of pollinators. There are more pollinators than what we have listed and the characteristics are based on trends that have been observed. Flowers don’t always fall cleanly into just one category.
6. Once you’ve discussed all of the characteristics, pass out the flowers and ask the students to fill in the portion of the worksheet that asks what characteristics they see and what they think might pollinate it.
7. You can then go around the room and have students talk about their flower and why they’ve chosen the pollinator they did. You can facilitate discussion about how not all of the flowers fit perfectly into a category and how some flowers are called “generalists” and can be pollinated by more than one type of pollinator. This discussion added to seeing all of the colors and shapes will exemplify the biodiversity that exists.
8. Once you’ve answered any lingering questions, you can head outside to observe pollinators in action. The most common pollinators you will see will be bees and butterflies.



**Resources**

* Presentation and handout can be found on the “What’s the Buzz?” lesson page on the KBS GK-12 website.

