COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES
Women in Science & Engineering

The Bio/Diversity Project
Lesson Title: Planting a Pollinator Garden

Teacher: Kelly McHugh and Skylar Batty
Edited By: Elena Greenberg
Grade Level: *9th*
Time: *50 minutes*

AZ State Science Standard:	*Essential HS.L2U3.18* ● *Obtain, evaluate, and communicate about the positive and negative ethical, social, economic, and political implications of human activity on the biodiversity of an ecosystem.*
Content Objective: Math, Reading, Science, Writing, Other:	● *Students will be able to create a pollinator garden for their school that encompasses their research of how to attract specific pollinators* ● *Students will be able to engage in a hands-on experience of creating a pollinator garden that promotes biodiversity and pollinators* ● *Students will be able to create their own seed bomb to take home that can be the start of their own pollinator garden*
Language Objective: (Optional)	N/A
Scientist of the Week:	● Margaret S. Collins ○ Field Biologist (earned her Bachelors in biology) ○ Nicknamed 'Termite Lady' for her research in termites ○ American Entomologist ○ Born in 1922 in West Virginia ○ Started college at the age of 14 ○ Worked in North and South America, and discovered the wood termite Neotermis Luykxi ○ Studied chemical defense of termites

Vocabulary	**Materials**
● Biodiversity ● Pollinator Garden	● Plants ● Seeds ● Signs ● Paint ● Paint brushes ● Gardening tools
Seasonality: (If more specificity is required, please note date/time range under the season) Highlight which season(s) your lesson would be most suited to. When working with the natural world, it is	

important to keep this in mind for your planning! Some activities are possible for a brief window of time while others may be appropriate during any time of year.				
Monsoons July-Sept.	*Autumn* Oct.-Nov.	*Winter* Dec.- Feb.	*Spring* Mar.-Apr.	*Dry Summer* May-June

Guiding Questions:

- How do pollinator gardens promote biodiversity?
- What factors are important to consider when creating a pollinator garden?
- Why could we not have planted saguaro or agave in this pollinator garden if they attract pollinators?
- How can you make your own pollinator garden?
- Do all pollinator gardens look alike?

Engagement/Introductory Activity:

- Introduce scientist of the week to students
- Review safety information for working in the garden:
    - Wear gloves, be cautious of sharp tools -- don't use sharp tools without assistance or guidance of teacher, handle with care, protect yourself from sun, look for pests, stay hydrated
- Review proper planting procedure with students:
    - First, prepare garden bed for planting:
        - Make sure soil conditions are good, sun exposure meets requirements for specific plant, and distance between plants is appropriate.
        - Then, dig hole for required depth of specific plant (usually 1 foot).
    - Locate plant and support the root system while transferring into hole previously dug. Place flower in hole and gather soil around base to support it firmly.
    - Flowers:
        - The plants that work best for our environment are:
            - Globe mallow: low water, full sun or partial shade
            - Milkweed: water well, make planting hole twice as big as diameter of pot, support roots and place in hole
            - Flame honeysuckle: prune roots to make smaller and better for transfer and growth, dig hole larger than the root ball, fill hole with water and let drain before putting plant in it, water several times a week
    - Seeds:
        - The seeds that work best for our environment are: sunflower, lemon sage, phacelia, yellow evening primrose
        - Read instructions on specific seed packet for planting requirements concerning depth, spacing, and time commitment.
        - Prepare garden soil for where you want to plant -- make sure soil conditions are ideal for growth.
        - Dig holes to depth from instructions and gently cover with soil. Mulch if needed and put respective signs near specific plants.
- Review the various stations the students will explore out in the garden:
    - Station 1: Planting
        - Each group will plant the flower or seed that corresponds to their assigned pollinator that they researched the two weeks prior.
    - Station 2: Seed Bombs
    - Station 3: Making Signs

Exploratory Activity:

- **Go outside to the garden!**
    - Station 1: Planting
        - Each group will be planting the flower or seed that corresponds to their assigned pollinator
        - The flower/seed groups are planting may not be the exact one they proposed in their presentation, but they will still plant a flower that attracts the same pollinator
    - Station 2: Seed Bombs
        - Students will be making seed bombs that they can take home
        - Students will create the seed bomb using soil from the garden, clay, a handful of wildflower seeds, and water
        - Students will place this seed bomb in a earth friendly container so they can take it home safely
    - Station 3: Making Signs
        - Students will participate in the painting/creation of plant identification signs for the pollinator garden
        - Each class will collaborate on 1-2 pollinator plant signs
        - Signs should include the name of the plant and what pollinator the flower/plant attracts
        - Students are encouraged to make the signs creative/personal/scientific/colorful/fun

Explain:

- While outside in the garden, have students articulate the importance of pollinator gardens while they are going through the stations
- ask students questions about how this garden will promote pollinators and biodiversity

Extension Activity/Questions:

- Ask students to discuss why there is a variety of seeds within their seed bombs and which pollinators they may attract
- Ask students where the best place at home would be to plant their seed bomb
- Have students brainstorm a plan for how they will plant their seed bomb at home, and have them discuss what will need to be done to ensure the wildflowers grow (sunny or shady/ how much water/what kind of soil /etc.)

Evaluation Activity:

- Have students return to the classroom after planting the pollinator garden
- Have students complete an 'exit ticket' regarding how the class liked our lesson plans throughout the semester, and take feedback about our teaching, lesson plans, engagement, etc.