



PLANTING THE SEEDS OF NATURE-BASED EDUCATION

SUBJECTS



Students get their hands dirty making “seed bombs” with native plant seeds which can be planted in schoolyard or home gardens. Students will develop their observation and presentation skills.

GRADE LEVEL

3-5

TIME

45 MIN



PLANTING THE SEEDS OF NATURE-BASED EDUCATION

Objectives

Students will understand the importance of native plants and how they benefit ecosystems. Students will create and plant “seed bombs” to study and learn about native plants. Classes can plant and grow new plants either in home or schoolyard gardens.

Materials + Preparation

For this lesson, you will need:

- Soil
- Clay
- Plastic baggies (compostable is best)
- Seeds
- Small envelope
- Water (spray bottle is best)
- Paper plates (or other portable surface that can get dirty)
- Paper bag
- Cup for measuring soil and clay
- Optional: table or desk covering for easy clean up

If desired, cover desks, table or work surface with a tablecloth. Fill a spray bottle or two with water, to have on hand during the activity. Divide the supplies into individual packages for the students.

Each student packet should contain:

A pinch of **seeds** (put one pinch in a small envelope and seal shut with tape until ready to use)

One **paper plate**

One **paper bag**

One baggie with **soil**

One baggie with **clay**

Note: students should receive equal parts of soil and clay, separated. To divide among a classroom of fewer students, use ¼ cup of each. To divide among a larger classroom, use ⅛ cup of each.

Lesson Introduction

To complete this lesson and activity, use the “KWL” system to gauge students’ existing **knowledge**, what they **want** to learn, and what they have **learned** after planting and studying native plants.

1. Start by showing photos of common native plants in the Chicago region (for inspiration, see list of plants on the last page), and asking students what they might know about native plants. Some prompts might include:
 - What do you think a native plant is?
 - What do you know about how seeds grow?
 - Do you know or have you ever seen any native plants?
2. You can also show a short video with native plant observations, to get students familiar with the names of various species and what they look like when grown. Two video options include:
 - [Humboldt Park Native Garden Walk](#)
 - [Prairie Plants at Midewin National Tallgrass Prairie](#)
3. After the video, ask open-ended questions such as:
 - What did you notice about the native plants?
 - What did you notice about the sizes, colors, shapes or varieties of the plants?
 - In what ways did those plants look similar or different from the plants you see in your schoolyard, park or yard?
4. Introduce the “seed bombs” that the students will be making: balls of soil and clay with native seeds that once planted and cared for will grow into plants like the ones shown in the photos and/or videos. The benefits of using seed bombs to plant include:
 - the soil and clay help seeds retain moisture which is important for germination
 - the soil and clay protect the seeds from hungry animals, like birds in the wintertime
 - getting our hands dirty with soil is FUN and touching soil supports student health and lowers stress levels because of the bacteria - *Mycobacterium vaccae*

Hands-on Lesson Activity: Making “Seed Bombs” (see [this video](#) for a demonstration)

5. On a paper plate, students should mix equal amounts of clay and soil until they are fully combined.
6. Spray or sprinkle water slowly and mix into soil and clay - do not oversaturate. Students should use their hands to mix the water into the soil and clay.
7. Clumps should start to form as students continue to mix. Students should use the clumps to form balls that fit in their hand

(approximately 1-inch in diameter)

8. Once the ball is the desired size, students should insert seeds on all sides (approximately 4-6 seeds per ball). Do not mix different plant seeds together! Seeds germinate more easily when not competing with each other.
9. Let the seed bombs dry on the plate for 24 hours. Once dry, students should store the seed bombs in their paper bag until ready to plant them.
10. Optional student assignments:
 - Ask students to research other plants native to the Chicago area
 - Ask students to research how certain plants have been stewarded by Indigenous people
 - Ask each student to pick a plant to research and present

Conclusion

11. Plant the seed bombs in spring. Planting native plants is ideal in an empty space in an outdoor schoolyard or home garden, but plants can also be planted and studied in a large pot by a sunny window. Note that indoor seed germination will require more moisture.

Extensions

Map locations of planted seed bombs and collect data about the seed bombs success.

Identify characteristics (sunlight, access to soil, types of soil, density of nearby vegetation, etc.) of where seed bombs are planted, and measure success of seed bombs over time.

Hypothesize and evaluate what size seed bomb, or number of seeds in a seed bomb, or density of seeds in a seed bomb is ideal. For this, you'll need to adapt the activity instructions to direct groups of students to make seed bombs of varying sizes and number of seeds. Analyze and explain why some seed bombs are successful and some are not.

Compare how well seeds germinate if set in a refrigerator for two weeks, versus seeds left at room temperature (Cold Stratification). You could place half of your seed bombs in a refrigerator, and leave the other half in the paper bags at room temperature. Then, compare after two weeks before planting in the ground.

Helpful Information + Vocabulary About Native Plants

Vocabulary to Use

Native:	someone or something original to a place
Prairie:	an ecosystem with mostly grasses and some flowers
Germination:	the process when a plant grows from seed
Pollinator:	an insect or animal that carries pollen from flower to flower

Ecological Importance of Native Plants

Native plants provide shelter and food for wildlife. These plants are an important source of food for native birds, insects and other animals which have evolved with these plants.

For example, **Monarch** butterflies **ONLY** lay eggs on **milkweed** plants. Plants such as **New England aster** provide birds that stay the winter with seeds as a food source. In winter, the flowers will turn into seed heads and look “dead.” Keep the seed heads around as a natural bird feeder!

Local History + Place-Based Learning

Learning about native plants also provides the opportunity to learn about Native people. How had the lands been stewarded by Indigenous people before colonization? Are there ways that Indigenous people use these plants in food and medicine? Indigenous people have had a harmonious relationship with the Earth, we have learned a lot from Indigenous people on how to care for the Earth and to be resilient to climate change.

Important Role with Water

Chicago was built on a wetland with mostly clay soil that naturally causes pooling and flooding. Since native plants have long roots, they create pathways for water to trickle down and be absorbed into the soil.

Water from rain or melting snow that travels over an impermeable surface (concrete, asphalt, and even turf grass) is called stormwater or runoff. In Chicago, this stormwater runs off the surface and heads to a sewer. In some places, the water might head straight to a river or stream. That water carries pollutants with it, like oil or other fluids from cars, pet waste or anything else that might be on the ground. Native plants are one form of “green” stormwater management that captures and filters rain water.

Common Plants Native to the Chicago Region

Baptisia australis, Wild Indigo

Rudbeckia hirta, Black-eyed Susan

Monarda punctata, Spotted Bee Balm

Monarda fistulosa, Wild Bergamot

Pycnanthemum virginianum, Mountain Mint
Aster laevis, Smooth Blue Aster
Symphyotrichum novae-angliae, New England Aster
Liatris spicata, Blazing Star
Blephilia hirsuta, Hairy Wood Mint