Building an ECOSYSTEM in your classroom

Creating a bioactive habitat with your students can give them a window into the natural world while easing long-term upkeep for class pets and plants.

1. Create a mini-world

Before starting a terrarium or aquarium, teachers and students should research the kind of ecosystem they want to create, including the light, temperature, and humidity levels and the kinds of plants and animals living there.

Clear glass or acrylic jars or tanks are the most commonly used containers, both for sturdiness and to allow easy observation. Free or inexpensive tanks are regularly available via **thrift stores**, **secondhand sites**, and **hobbyist swap sites**, or by recycling and cleaning large glass food containers.

2. Lay a foundation

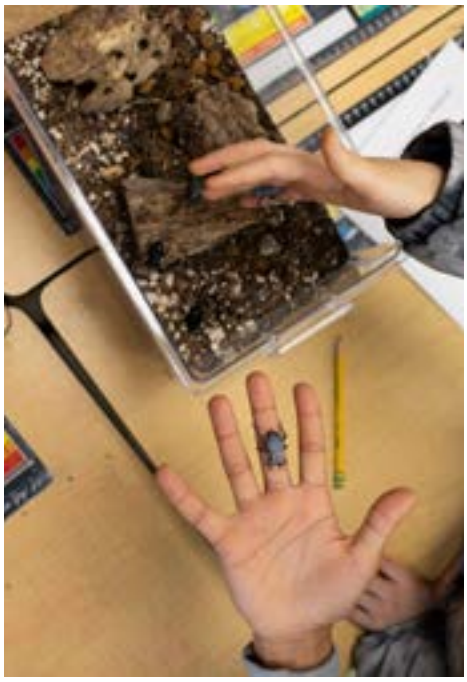
Soil in a bioactive habitat is not sterile; it is full of microorganisms that help enrich plants and break down decaying matter.

- Students can collect soil from a similar ecosystem to the one to be recreated, such as in a forest or wetlands. Use soil from an area that has not been exposed to pesticide or toxins.
- Students can make their own soil through a mix of organic garden soil (without added fertilizer or perlite), sphagnum moss, sand, leaf litter, and gardening charcoal. If creating soil from sterile supplies, they will need to add microbes, which can be purchased from pet and horticulture supply stores.
- Terrariums need a drainage layer, such as lava rocks or horticulture clay balls, below a thicker layer of bioactive soil.

3. Hire a 'clean-up crew'

In addition to microorganisms, bioactive enclosures need detritovores—small animals that help process plant and animal waste to keep the enclosure clean. Among the most common:

- **Springtails:** Tiny, six-legged arthropods known for a hooked, forked tail that allows them to fling themselves long distances.
- **Isopods:** Land-dwelling crustaceans, commonly known as pillbugs or roly-polies; some species curl into a ball when startled.
- **Earthworms:** Efficient composters, though they can overpopulate.
- **Arthropods:** Certain species of millipedes and beetles can be efficient for cleanup, though many also eat live plants.



4. Plant a community

Habitats should include an array of different plants, such as mosses, air plants, and rooted plants. Consider:

- Does the plant match the light, temperature, and humidity of the rest of the terrarium?
- Is it safe and nontoxic for other plants and animals in the terrarium?
- Is it likely to be eaten by animals in the habitat?

5. Choose compatible animals

Once established, bioactive enclosures can house class pets such as reptiles, amphibians, and arthropods. Consider:

- Does the animal match the requirements for light, temperature, and humidity of the rest of the terrarium?
- What are the animal's adult size requirements?
- Will there be a breeding population in the habitat? If so, how will it be controlled?
- Will the animal be given outside food or expected to feed on existing plants and animals? (A garter snake enclosure should not use earthworms as the clean-up crew, as they are part of the snake's natural prey.)

◀ Phil Dreste provides roaches, beetles, isotopes and other insects for his students to study at Kenwood Elementary in Champaign, Ill.

SOURCE: Education Week reporting
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