

TITLE | ANNUAL CARE WITH STUDENTS IN THE OUTDOOR CLASSROOM

CATEGORY | Garden Educator Training

SUB-CATEGORY | Outdoor Classroom Design

OVERVIEW | This document outlines an introductory training on edible, annual gardens and best practices for involving students in their care and maintenance.

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Training Rationale:

An edible garden is an invaluable resource for connecting students to the natural world. Planting, caring for, harvesting, and finally eating edible crops is an amazing and rich experience for the senses. The community created among students when working to grow and eat food together is also an important part of the impact of edible gardens. For a new or returning garden educator, it is important to know the basics of growing annual plants as well as how to rehabilitate a space quickly after the summer season when these spaces are often neglected. This work can be done with students in the first month of school. When facilitated effectively, student participation can increase buy-in, build community, and make the workload lighter. It is important for educators to consider which garden tasks should be done with or without student help, and how to embed tasks in their lessons.

Suggested Time of Year:

We suggest conducting this training in August or September, before school starts, so that garden educators are 1) prepared to revitalize their garden after a summer of neglect, 2) acquainted with basic annual plant care and maintenance, and 3) ready to incorporate student involvement into the maintenance of the garden. It is also important to review annual care in December or January, prior to spring planting.

Suggested Workshop Length:

3 hours for the first training, with an additional 2-3 hours midyear.

Training Objective:

Garden educators will review best practices for maintaining an annual garden and how to include students in its care.

Training Overview:

This training is most effectively hosted in an established outdoor classroom with a majority of the Top 10 Infrastructure (see *Building Your Outdoor Classroom: The Top 10* in the Table of Contents), and space for preparing and planting an edible bed. Utilize existing school gardens and/or local demonstration gardens to host or facilitate outdoor classroom design and horticulture trainings. This gives educators an opportunity to see a variety of green spaces, network with similar programs and professionals, and gain inspiration for their own outdoor classrooms.

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This training covers best practices for maintaining and managing an edible school garden and should include topics such as understanding annual plant needs, revitalizing soil, planting practices, and navigating local gardening resources. It is likely that participants will have varying degrees of garden knowledge, so it will be most successful to create content-specific stations and divide by self selecting into groups based on experience. Each station should then cover the information most relevant to the group’s needs, rather than trying to fit all of the content included here into one training. Topics can be introduced, reviewed, or expanded upon throughout the year, or resources can be shared outside of trainings in order to build on the content initially covered.

The activity ideas section below outlines potential stations, content, and hands on activities. It is effective to model garden maintenance in ways educators might lead these activities with their students. After going through the activities, this training then directs educators to reflect on considerations and practices for involving students in care and maintenance of annual gardens, and provides educators an opportunity to plan some of their garden lessons.

Activity Ideas:

Annual Gardens

Below are recommended stations that showcase approaches to caring for annual gardens that educators can rotate through during training. Trainers can pick and choose stations, content, and activities that best fit the group’s knowledge and skills.

They are formatted as:

1. STATION TOPIC

Content

- Content is listed as Level 1 (beginner), Level 2 (intermediate), or Level 3 (advanced).
- Trainers should choose 2-4 content areas to cover per station.
- Content should be adapted based on group prior knowledge, time allotted, and available resources.
- Content can be covered through group discussion, lecture, or demonstrated through the activities listed below.
 - Activities or visuals to demonstrate a concept or model a practice

Stations

1. ANNUAL PLANT NEEDS AND CARE

- What is an annual? (Level 1)
 - Discuss the differences between annuals, which complete their life cycle and die after one season, and perennials, which live for more than 2 years and have a dormant period each year (which is often either in winter or summer depending on geography).
 - Take a tour of the outdoor classroom and practice identifying annuals and perennials currently growing.
 - Look at the “Plant Life Cycle” poster in Curriculum Visuals, linked in the Table of Contents. During your tour, practice identifying which stage of the life cycle each plant is currently in.
- Plants need sun, soil, water, and air (Level 1)
 - Look at the “What Do Plants Need?” poster in Curriculum Visuals, linked in the Table of Contents
 - See Education Outside Curriculum, 1st Grade: Unit 1: Plant Structure and Function or 5th Grade: Unit 1: Plants and Energy Flow for lessons or activities that could be modeled for educators.
- Lifecycle of an annual (Level 1)
 - Look at the “Plant Life Cycle” poster in Curriculum Visuals, linked in the Table of Contents
 - See Education Outside Curriculum, 2nd Grade: Unit 1: Life Cycles for lessons or activities that could be modeled for educators.
- Annual planting: direct seeding, starting seedlings or starts, transplanting (Level 2)
 - Divide into various sized groups and model planting with students in different ways (entire group at once, small groups, individuals, with popsicle stick markers or visual instructions). Discuss observations.
 - Practice planting with different types of seeds and plants. Examples: direct seeding radish and/or fava beans, starting lettuce in trays, transplanting onion/arugula (tightly packed) and brassica starts (not tightly packed) to explore differences.

- If available, pass out seed packets, catalogs, or vegetable gardening books to read and share-out differences in planting needs.
- Harvesting: roots, stems, leaves, flowers, fruits (Level 2)
 - Look at the “Parts of a Plant” poster in *Curriculum Visuals*, linked in the Table of Contents, and discuss techniques for harvesting each plant part.
 - Make a snack by harvesting and using one of each plant part. See *Recipes for Cooking in the Outdoor Classroom* in the Table of Contents for simple plant part recipes.
 - If available, pass out seed packets, catalogs, or vegetable gardening books to read and share out differences in mature plants.
- Water needs and watering practices (Level 2)
 - If available, pass out seed packets, catalogs, or vegetable gardening books to read and share out differences in plant needs.
 - Practice identifying plants that require very little water or heavy water (use online or local gardening resources for tips and tricks).
 - Have educators share out examples of watering stations, rules, and routines in their own outdoor classrooms, or ideas for implementing them
 - See *Education Outside Curriculum*, 3rd Grade: Unit 1: Plant Adaptations for lessons or activities that could be modeled.
 - Make signs for watering stations in educator’s gardens: “Watering station,” “Low and slow like a pro,” “Water here for x seconds,” “Thirsty plants live here,” “No water needed here,” etc.
- Hydrozones and irrigation (Level 3)
 - Map out existing water sources and known plants in the outdoor classroom. Make a plan for where water is and is not available and how that will affect planting throughout the year.
 - Practice laying irrigation, calculating watering schedule based on plant needs, and/or setting programs on an irrigation system.

2. SOIL

- Soil components: 45% minerals, 25% water, 25% air, 5% organic matter (Level 1)
 - Look at the “Soil Composition” poster in *Curriculum Visuals*, linked in the Table of Contents,
 - See *Education Outside Curriculum*, 2nd Grade: Unit 2: Soil and Decomposition for lessons or activities that could be modeled.
- Revitalizing after summer neglect (Level 1)
 - Observe hydrophobic soil and then rehydrate
 - Practice double digging by loosening soil and then digging in compost
- Soil/mineral types: sand, silt, clay, loam (Level 1)
 - Put an example of each soil type into a funnel and pour water through to observe the different infiltration rates.
 - See *The Growing Classroom*¹ for “The Nitty-Gritty” lesson and “Clay, Silt, and Sand Chart”
- Amendments (Level 2)
 - Chop, turn, and sift compost in a 3 bin system to observe how plant material is recycled in a garden
 - Prepare, overview, or interact with a worm bin
 - Discuss various soil amendments (humus, worm castings, natural fertilizers etc.), their benefits to soil composition and annual plants, and where/how to find them locally
 - Introduce macro-nutrients (NPK=Nitrogen, Phosphorous, Potassium) and their benefits to various stages of an annual plant’s life cycle. Match crops with their preferred ratio of macronutrients in a natural fertilizer.
- Soil testing (Level 3)
 - Identify which nutrients can be tested for, and why it is important.
 - Demonstrate various commercial soil testing kits or techniques.
 - Identify potential sources of soil pollution in your area and discuss the process for getting a professional lab test done (reach out to your local extension office).

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3. PLANNING AN ANNUAL GARDEN

- Choosing the right plant for the right place (*Level 1*)
 - Discuss and chart out local specifics for the path of the sun, hours of sunlight, annual rainfall, wind, fog, or other regional patterns.
 - Have educators create a map of their outdoor classroom, filling in the path of the sun, soil types, water access, microclimates, dimensions, planting plans, etc. Talk with them to fill out unknown information while on site.
- Regional specifics and resources (*Level 2*)
 - Review a variety of local resources, such as regional garden books, classes, stores, etc.
 - Read through regional gardening books (such as *Golden Gate Gardening²* in the Bay Area) to become acquainted with local plant hardiness zones, microclimates, native plants, or planting calendars.
- Planning (*Level 3*)
 - Create your own planting calendars for the first part of the school year, and add crop labels to the map of the outdoor classroom and the annual/food planting area.
 - Discuss crop rotations for maintaining soil health, and plan your next rotation of crops for each area in the annual garden.
 - Schedule planting into educators' curricular scope and sequence calendar (see *Learning and Teaching Outdoors Training Overviews* in the Table of Contents for an example scope and sequence), determine days until maturity, and include a harvest or cooking lesson when crops will be ready.
 - See *The Top 10: An Extended Picture Guide* in the Table of Contents for more ideas and considerations when planning your Food Garden area.

Gardening with Students:

After going through the stations above, have educators reflect on what activities, resources or topics are appropriate for student involvement. Discussion questions can include:

- What are some behavior management considerations in a school garden?
 - This discussion can be made engaging through skits performed by the educators. Below are some skit prompts that demonstrate challenges that can arise in a school garden. This is an effective way to compel educators to think about how to respond to those challenges.
 - Plants that get stepped on, pulled out, or picked from by students
 - Rocks, irrigation tubes, or other infrastructure getting pulled out
 - Hot, cold, wet, or otherwise uncomfortable weather (more examples: sun in their eyes, no shade, etc.)
 - Digging, watering, or weeding in the wrong areas
 - Fear of dirt, bugs, or plants
 - Having only 1 strawberry (or other food) growing for a whole class or school
 - Plants that bolt or have pests
 - Vandalism
- Some points to highlight:
 - Be patient with students and mindful of their child development stages (such as motor skills)
 - Let go of the idea of a perfect garden and expect the unexpected (i.e. starts will be pulled out, moveable items will be moved, food will be picked before ready, pests will appear.) Always find the learning opportunities in these moments.
 - Setting up routines and tasks early in the year will increase students' sense of responsibility for the space. For tips, see "Building Classroom Culture" in *Education Outside's Best Practices for Teaching*, linked in the Table of Contents.
 - Is a gardening activity best done on your own, with students, or with other adults? Some activities may be fun to do with students, but might need to be re-done for ideal plant/garden success (i.e. replanting starts if they were planted too close together by students, or thoroughly watering again after a class).
 - Consider how many students can feasibly participate in certain activities or areas of the garden at a time. Some garden tasks can be done simultaneously and/or autonomously if expectations are set and clear.

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- What garden tasks can be done with students? What are some tasks that can be adapted to suit students?
 - Some examples of appropriate student garden activities:
 - Rebuilding soil by watering, adding compost, or double digging
 - Mapping the garden for sun, soil, and water conditions
 - Deciding what seasonal crops to grow (for example, by student vote)
 - Direct seeding, starting, and transplanting
 - Choosing the right plant for the right place based on specific plant needs
 - Chopping, turning, and sifting compost
 - Feeding or harvesting from worm compost systems
 - Harvesting, preparing, and cooking from annual beds
 - How and when can gardening tasks be incorporated into your scope and sequence? What are some challenges educators can expect to encounter when trying to connect their curriculum with the needs of their garden space?
 - This conversation is most productive if educators are already acquainted with lesson planning (see “Backwards Planning, The Learning Cycle & Lesson Adaptation” in the *Learning and Teaching Outdoors* Training Overviews in the Table of Contents).
 - Activities and considerations for educators:
 - Plan your annual garden with cooking lessons in mind
 - Backwards plan from recipe (harvest) to planting while making a planting plan.
 - Create a budget for purchasing fruits or veggies from the store to supplement crops from the garden.
 - If the scope and sequence is already planned, determine which plants or plant parts are desirable for certain lessons and add them to the annual planting plan
 - Develop garden routines and create lessons to set expectations and practice expected behavior. Be sure to consider age appropriateness, behavior management tools, and seasonal garden needs.
 - Example Routines: incorporate one garden maintenance lesson per month; include a standard amount of time per class for maintenance; incorporate maintenance as a job to do once students are finished with a lesson; incorporate maintenance as a station within a lesson.
 - Review the posters available in *Curriculum Visuals*, linked in the Table of Contents, and identify how students can connect science content with garden activities.
 - Example of connecting science to garden tasks: Composting: use the “Soil Composition” visual in the *Education Outside Curriculum*, 2nd grade: Unit 2: Soil and Decomposition, and engage students in garden composting jobs while discussing soil composition.

Assessing Understanding:

- Exit Ticket: Have educators create a two week plan for revitalizing their annual gardens with student assistance
- Throughout the year, utilize the Best Practices Rubric in Education Outside’s Best Practices for Teaching, linked in the Table of Contents, to help educators develop systems for planning garden-based lessons that maximize student experiences in the outdoor classroom

References:

1. Jaffe, Roberta. Appel, Gary. (2007) *The Growing Classroom: Garden-Based Science*. Vermont: National Gardening Association.
2. Peirce, P. (2010). *Golden Gate gardening: The complete guide to year-round food gardening in the San Francisco Bay area and coastal California*. Seattle, WA: Sasquatch Books.