

School Gardening 101

Bibliography of Resources used for Classroom Lessons

Lesson plans were retrieved from the following sources with permission:

- *Earth Steward Gardener Curriculum*. Cultivating Community.
<http://cultivatingcommunity.org/schools.shtml>
- *French Fries and the Food System: A year-round curriculum connecting youth with farming and food*. (2008). The Food Project.
- *Healthy Foods from Healthy Soils*. (2003). Elizabeth Patten and Kathy Lyons.
- *Inside the Edible Schoolyard Classroom: The Garden Companion*. (2008). The Chez Panisse Foundation.
- *Maine Apprentice Gardener Program Curriculum*. (2007). The University of Maine Cooperative Extension.
- *A Guide to Connecting Farms to Schools and Communities*. (2007). Vermont FEED.

School Garden 101
Session 1
Agenda

3:30 Welcome

Introduce the Facilitators

Facilitator expectations for the course

- Build understanding of basic gardening principles
- Connect gardening principles to school activities and curriculum
- Support the creation and expansion of school gardens

Share course syllabus, binder and describe the course layout

3:45 Participant expectations

Break into school groups to discuss participants' reasons for taking the course and what they want to accomplish as a result of the course. Share with whole group if there is time.

4:05 Lesson: Compost

5:05 Break

5:15 Discussion: School Composting

5:45 Activity: create germination chambers for 2-week observation and documentation

6:00 Close

School Garden 101
Session 1: Compost
Lesson
(60 minutes)

- I. Backyard Compost (*Powerpoint presentation*)
 - a. What is compost?
 - b. Benefits of making and using compost
 - c. How to use compost in a vegetable garden
 - d. How to make compost on a small scale
 - i. Choosing a site
 - ii. Ingredients to use
 - iii. Ingredients to avoid
 - iv. Procedure for building a compost pile
 - 1. Bins
 - 2. C:N ratio
 - 3. Water, air
 - 4. Volume
 - v. Monitoring the compost pile
 - 1. Temperature
 - 2. Aeration

- II. Vermiculture: composting with worms (*Demonstration – create a worm bin*)
 - a. Benefits of vermiculture
 - b. Types of worms to use
 - c. The worm bin
 - i. structural components
 - ii. shape
 - iii. calculating size of your worm bin
 - d. Where to put the worm bin
 - e. Worm bedding
 - f. How many worms do you need?
 - g. Maintaining the worm bin
 - h. Harvesting compost, harvesting worms

- III. Wiscasset school composting example – 15 min video

Publications provided:

UMaine Cooperative Extension bulletin 1143: Home Composting
UMaine Cooperative Extension bulletin 1159: How Compost Happens
MOFGA fact sheet # 5: Composting in the Back Yard or on a Small Farm
Washington State University publication: Composting with Redworms
Pennsylvania State University publication: Guide to Worm Composting

Recommended additional references:

UMaine Cooperative Extension publication 1140: *Composting to Reduce the Waste Stream*.
Appelhoff, M. 1982. *Worms Eat My Garbage*. Kalamazoo, MI: Flower Press.
Appelhoff, M., Fenton, M.F., Harris, B. L. 1993. *Worms Eat Our Garbage: Classroom Activities for a Better Environment*. Kalamazoo, MI: Flower Press.

Worm bin demonstration:

Used 14 gallon plastic blue tub purchased for \$6.00.

Used clear plastic shallow container (another \$6.00) containing 2 wooden blocks for drainage base.

Drilled 10 drainage holes in bottom of blue tub, set on wooden blocks in clear container.

Drilled 5 larger holes in each of the two longer sides of the tub, for ventilation.

Covered ventilation holes with a strip of window screening, taped on with clear packaging tape. (Keeps worms from crawling out.)

Filled tub with shredded newspaper.

Added a couple gallons of shredded leaves.

Added 1 cup garden soil.

Mixed and moistened to wrung out sponge consistency.

Added worms to one side of bin, covered with bedding

Added 1 ¼ pounds kitchen waste above worms, covered with bedding.

Purchased worms from Brett Thompson, The Worm Wiz, 315 Ridge Road, Bowdoinham, ME 04008.
(207) 837 2397

Used 4 Chinese take-out containers of worms.

Each worm container costs \$6.00 plus shipping – total was \$31.65.

Shipped in their own bedding, each container contains between 50 and 100 worms.

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Session 1
Discussion: School Composting – Facilitator Reference Sheet
(30 minutes)

I. Small group discussion:

15 minutes

Break up into groups of four. Please make sure that your group is mixed – not all participants are from the same school.

1. Introduce yourselves to one another (*name, school, occupation*)
2. Reaction to school composting video
 - a. What surprised you about the composting program at the Wiscasset School?
3. Considerations for school compost
 - a. What are some sources of ingredients for school composting?
(*pre-consumer cafeteria waste, post-consumer cafeteria waste, classroom...*)
 - b. What are some examples of composting units (places to put the compost)?
(*classroom worm bins, outdoor bins, on-farm windrows*)
 - c. What are some uses for finished compost at a school?
(*school garden soil amendment, mulch for landscaped beds, topdressing for school lawn, amendment to container garden mix...*)
 - d. What people in your school community need to be involved in the project for success?
 - i. *students – potential roles include collecting waste, building bins, monitoring pile...*
 - ii. *teachers – teach students about science of composting..*
 - iii. *cooks – providing food waste..*
 - iv. *community members – donate materials to build bins..*

II. Large group presentation:

5 minutes

1. School snapshot: Ask two participants in the course to share about their school composting program
 - a. Who is involved?
 - b. What are your sources of ingredients?
 - c. What are your composting units?
 - d. How does the compost get used?

III. Small group discussion:

10 minutes

Break up into planning groups from the same school. Ask one person from the group to capture notes.

1. Composting at your school
 - a. What are the first steps to getting a composting program going at your school?
(*making a plan, seeking approval from school administrator*)

IV. Group wrap up (the entire class comes back together)

1. Seed germination chamber (mason jar) take-home activity – bring back in 2 weeks
2. What is coming up next week: Your Garden Soil
3. What is due next week: School Group Compost Plan

School Garden 101
Session 1

School Composting Discussion Worksheet

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2. Reaction to school composting video:

What surprised you about the composting program at the Wiscasset School?

3. Considerations for school compost:

a. What are some sources of ingredients for school composting?

b. What are some examples of composting units (places to put the compost)?

c. What are some uses for finished compost at a school?

d. What people in your school community need to be involved in the project for success?

Mason Jar Germination Chamber

Seed germination and seedling development in a monocot and a dicot

Objective

In this activity you will compare the processes of seed germination and seedling development in a monocot (corn) and a dicot (bean).

Description of Activity

Using a mason jar, construction paper and polyester batting, prepare a germination chamber.

- Cut construction paper to fit, place inside jar against the glass.
- Stuff enough polyester batting into the jar to hold the construction paper snugly against the jar wall.
- Pour warm water over the batting until you see about ½ ” of water in the bottom.
- Place two corn seeds and two bean seeds (pre-soaked in 10% bleach solution for 5 minutes, then in warm water for 2 hours) in the chamber, between the construction paper and the glass, about 1/3 of the way down. Use a toothpick or tweezers to pry the paper away from the glass to insert the seed. One seed should go on each side of the jar.
- Watch to make sure water wicks all the way up the construction paper.
- When you get your germination chamber home, place it in a warm, well-lit place.

It is critical that you maintain water in the bottom of your germination chamber at all times. However, it is equally critical that you do not submerge the seed itself at any point during the activity – it will not germinate if left submerged! Germination should proceed as long as the construction paper in contact with the seed is kept constantly moist.

Make daily observations of seed germination and seedling development over a period of two weeks. Keep a project journal that includes your recorded observations (including labeled drawings) for each day. Each page should include written observations for the day and a drawing showing the appearance of the corn and the bean seed or seedling on that day. Label each part of the seed or seedling (root, stem, leaf). Days should be numbered consecutively. Today is day zero, tomorrow is day 1, and so on. **Bring your chamber and your journal back to class in two weeks.**