Edible Schoolyard Infrastructures and Systems

Summary
In the Edible Schoolyard garden, we have created systems and built structures in collaboration with handymen, artists, and students that lend themselves well to explorative learning.

Ramada
Functioning as a place of gathering and an outdoor classroom, the circular, web-like wooden structure of the Ramada provides a central place for beginning and ending each garden class.

- 20 feet in diameter, the Ramada is laced with deciduous kiwis that climb up the sides of the structure and canopy over the top, proving shade in the summer months.
- Straw bales around the circumference provide over 30 seats – enough for a middle school class, its classroom teacher, garden teachers, and volunteers.
- Students are held to the same behavioral expectations in the Ramada as in the classroom (i.e. raised hands and one voice in circle).
- The circular space allows for group discussions, demonstrations, tastings and games.

Greenhouse
The greenhouse allows garden teachers and students to propagate plants for the Edible Schoolyard garden, the annual plant sale, and donations for other local garden programs.

- We teach students the following methods of propagation:
    - Sowing seeds
    - Cuttings and grafting
    - Divisions
- An automatic timer engages a sprinkler system for the plants in the greenhouse and plants on the surrounding tables.

Soil Bins
The soil bins store potting mix ingredients and finished mixes.

- We use the soil bins to store finished sifted compost, sand, and basic potting soil.
- We use one soil bin for mixing soil mixes used in propagation.
- We use two types of soil mixes for propagation: Seedling Tray Mix and a "Lunch Mix." (Recipes can be found in the *Potting Soil Mixes for Bulk and Small-Scale Garden Use* take home from the "Wendy Johnson's Gardening 101" session.)

Compost Row
Compost Row refers to the row of free-standing compost piles at different stages of decomposition in the back end of the Edible Schoolyard garden.

- Compost piles are turned down compost row in the direction of least-to-most decomposed.

- The free-standing system allows students to comfortably stand around the compost and turn the piles together as a group.
- Students are able to observe the different stages of decomposition from pile to pile.
- The drop-off zone is located before the most recently built compost pile (least decomposed) in Compost Row.
    - Students drop off garden scraps in the drop-off zone.
    - Students empty the food scraps bucket from the kitchen classroom in the food scraps bin in the drop-off zone.
- See the *Edible Schoolyard Garden Jobs* take home from the "A Typical Garden Class" session for more on composting with students.
- Other methods of composting that we employ at the Edible Schoolyard include:
    1. Vermicompost: worm bin
    2. No fuss: a cylindrical wire frame that we fill with raked up leaves. The leaves slowly decompose on their own with no turning.

Worm Bin

The worm bins, located behind our outdoor kitchen, are wooden bins used for decomposing food scraps.

- Students learn about the importance of worms as decomposers and harvest worm castings.
- Worm castings are incorporated into our soil mixes for propagation and used to make compost tea.

Chicken Coop

In the Edible Schoolyard program, the presence of chickens and ducks has fostered a nurturing spirit within the student body and added tremendously to student buy-in.

- The capacity of the chicken coop in the Edible Schoolyard is about 30 birds.
- Garden teachers integrate chicken time into garden classes as much as possible to practice appropriate chicken handling.
- Students are encouraged to check for eggs before school, after school, and during garden class.
- Students use baskets hanging in the tool shed to collect eggs. They deliver the eggs to the kitchen classroom with the date of collection.
- Kitchen classes incorporate garden eggs into recipes whenever possible.
- Garden teachers encourage students to move the chicken tractor to garden beds as part of cultivating.
    - The chicken tractor is a small mobile coop that is used to concentrate beneficial chicken scratching, consumption of weeds and insects, and fertilization.

Tool Shed

We have set up the tool shed at the Edible Schoolyard to be straightforward and easy for students to navigate.

- Students learn in their first garden class that one side of the tool shed has "adult tools," meaning that they need to ask an adult first before using.
- On the student side of the tool shed, all tool categories are clearly labeled and open to use.

- All tools that belong in the tool shed display yellow tape while tools that belong on the outdoor tool racks display red tape.
- Students are encouraged to come up with the appropriate tools for their garden job and select them from the tool shed.
- The tool cleaning station is located adjacent to the tool shed. After every garden class, students clean their tools in barrels of linseed oil and sand.
- You can find a comprehensive list of the tool shed's contents in the *Tool Shed Contents* take home from this ("Infrastructure and Systems") session.

Rainwater Catchment System

The gutters on both sides of the tool shed connect to catchment tanks that allow us to capture hundreds of gallons of un-chlorinated water every time it rains.

- This system was made possible through a grant from the Alameda Countywide Clean Water Program.
- Students learn about water conservation by using water from the catchment tanks to water plants in the garden.
- Catchment tanks are located above the apple orchard to irrigate the hillside area when possible.

Wood-Fired Oven

The wood-fired oven – built of stones, bricks and mortar – provides a great way to incorporate cooking in the garden.

- Ideally, we use the oven with each grade level. For example:
    - Roasting potatoes
    - Roasting beets
    - Roasting carrots
    - Making pizza

Outdoor Kitchen

The outdoor kitchen provides a covered space with sinks in the garden, shielded from the sun and rain.

- The covered space is large enough for 10-12 students
- Students built a constructed wetland to receive the water from the sinks. We refer to this as our greywater basin. The plants in this wetland absorb and filter the greywater before it goes into the garden.
- We use the covered space for:
    - Processing the harvest
    - Making flower bouquets
    - Microscope lab
    - Cacao station in "The Civilizations of the Americas" humanities walk
    - Afterschool class meet-ups and snacks

Pond

The pond provides a calming place in the garden for students and teachers alike to enjoy while also adding a unique ecosystem to explore.

- A solar-powered waterfall cascades into small pools that fill the pond with water.
- Aquatic plants vegetate the pond and perimeter.
- The ducks love playing and bathing in the pond.
- Fish living in the pond eat any mosquito larvae that try to grow.

Beehive

The beehive, secluded on the hillside of the garden, is used to teach students about the importance of pollinators and adds to the overall fertility of the garden.

- Students visit the hive as part of their 6th grade Bees in the Garden lesson.
- Students built exterior fencing to protect the hive, while Bay Bee Sitters, a local bee keeping organization, built and maintain the hive itself.
- For more information on the beehive, please refer to the *Severe Allergic Reaction and Bee Sting Action Plan, Bee Email to Community*, and *Bees in the Garden* lesson plan take homes from the "Making Standards Fun" session.

Orchards

The orchards are special places where we are using fruit trees to landscape areas of the campus. The fruit is harvested and used in the kitchen classroom or garden lessons whenever possible.

- The Hillside Orchard is comprised of over 30 fruit and nut trees. The terracing of the hillside is maintained and improved each year with students studying 'The Civilizations of the Americas," in which they learn how ancient civilizations used terraces to cultivate otherwise unusable land.
- The Triangle Orchard was a forgotten triangle of land between a service road and the outdoor basketball courts, where we planted 9 trees of various stone fruit varieties. The orchard will soon provide some much-needed shade for players on the blacktop.