



Edible Schoolyard Garden Infrastructures and Systems

Summary

One of the most exciting aspects of designing a structure or open space is thinking about the user experience, in this case our students. We believe there is an interplay between what you build and why you build it and how the students will interact with it. 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

The Ramada is the central meeting place for beginning and ending each garden class. The 20-foot diameter web-like wooden structure is laced with deciduous kiwis that climb up the sides and canopy over the top, providing shade in the summer months and a feeling of intimacy and enclosure within the larger open space of the garden. Straw bales around the circumference provide over 30 seats – enough for all the students, teachers, and volunteers in our typical garden class. The circular space allows for group discussions, demonstrations, tastings and games. In the Ramada, students are held to the same behavioral expectations as in the classroom (i.e. raised hands and one voice in circle).

Irrigation

We primarily use drip-line in our annual beds, most of our perennial beds and our orchards. In addition, we use a variety of sprinklers, including motion sensors, to water areas that are not on drip-line. We've chosen not to use timed-irrigation so that we are more directly involved in checking to see when an area of the garden needs irrigation.

Greenhouse

Our greenhouse is built with a simple 2x4 wooden frame and salvaged windows. 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. In the greenhouse, we teach students how to propagate by sowing seeds, using cuttings or grafting, or by dividing. We irrigate our starts by hand during the week, and with a sprinkler system on automatic timer over holidays or warm weekends.

Soil Bins

The soil bins store potting mix ingredients and finished mixes, including finished sifted compost, sand, and basic potting soil that we use in propagation.

Compost Row

At Compost Row we compost both garden scraps and food scraps from the edible 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. At Com

Other methods of composting that we employ at the Edible Schoolyard include:

Vermicompost: worm bin

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.
- We intentionally have worm bins near our Outdoor Kitchen for easy access to composting food scraps.

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
- Adjacent to the outdoor kitchen is our Long Table. We gather here with students for a myriad of activities, most notably to sit and have our seasonal final tastings together.
- The location of our outdoor kitchen is near a building that can supply us with electricity, which allows us to run an extension cord to power our induction burner, and any other electrical tools we may want to use.
- 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
 - Preparing the tasting
 - 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 local beekeepers built and maintain the hive itself.
- For more information on the beehive, please refer to the *Severe Allergic Reaction and Bee Sting Action Plan* and *Bee Email to Community* take homes in this section “Infrastructure and Systems” 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.
 - In the 7th grade Permaculture tract students build swales—which are ditches dug along the contour of a slope, to collect rainwater on-site, thereby reducing the need to irrigate the orchards. The swales also help prevent erosion and usually can store enough rainwater to the point of saturation, allowing the orchard trees to be independent of irrigation.
- 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.

Perimeter Fence

Our newest structure is for more than making just good neighbors.

- Originally built with the intention of keeping deer out of the garden and consuming all the food we've grown. Doubling as a Good Agricultural Practice, to keep not just the animals out, but also contaminants that may come with them.
- We're able to use the fence as a structure to trellis peas and other vining crops along.
- Chose an open-air style fence that doesn't obstruct any views particularly important on a school campus where visibility is vital.