Grow People
Grow Soil
Grow Food

A Curriculum for High School Garden Intern Programs

Based on 10 Years of Programs in The Learning Garden

By Magnolia Barrett and Cornelia Reynolds

Noyo Food Forest

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Welcome!

All gardeners, teachers, mentors, organizers, parents, and everyone interested in developing agricultural opportunities for youth:

The Noyo Food Forest is an independent nonprofit organization. For over ten years, we have operated The Learning Garden on the campus of Fort Bragg High School. The Learning Garden is a production garden as well as a demonstration and teaching garden. Over the years we have been fortunate to fund intern gardening programs that support interns with a small but significant stipend. Significant in that the youth deserved remuneration for their hard work, this is often their first job, and it's a meaningful opportunity in an economy with limited jobs for youth. The key goal and the success of these intern programs is to inspire youth's interest in market gardening and careers in agriculture.

This curriculum will be as much about organizing your community to support this program as about what to teach once you are going. Many organic gardening curriculums are available online. We encourage you to let your garden be your guide and develop your own plans based on our experiences and the many references we've included.

We assume you already have the will and the means to start and run a garden, whether for your school or for a community organization. Or you already have a garden and want to take it to a higher step and engage in social enterprise.

This curriculum is meant to set you on the road to success. It is unlikely to answer all your questions. We have an expression we use often that says: "All gardening is an experiment." Intern programs are also an experiment. So be creative. And good luck!

Sincerely,

Cornelia Reynolds, Executive Director

Magnolia Barrett, Learning Garden Manager

Crops of the Garden

Grow People *Grow Soil* *Grow Food*

The mission of The Noyo Food Forest is to cultivate a healthy local food system by creating opportunities for Fort Bragg youth and the Mendocino Coast community to learn about, grow, and access sustainably grown, garden-fresh foods.

Grow People

Want a thriving, beautiful, and productive garden? For your community, your school, or your organization?

Start with your people!

Engage your people! Develop your people!

Staff, volunteers, interns, students, any and all collaborators, whoever is part of your community.

Engage them in the reality of what you are. And in defining what you want to be. They are your most important assets. Get to know them.

Develop their skills, as well as their understanding of the garden and the environment.

Tap into their talents and unleash their potential in ways that mutually benefit them and your garden program.

Whether your primary goal is producing food, or training gardeners or, like ours, a balance of the two, only a committed, passionate community of participants will move you toward realizing your vision and deliver your long-term goals.

Only a committed, passionate community of participants will move you toward realizing your garden's vision and deliver your long-term goals.

Set the goal of building your vision for your garden.

Then, enroll everyone in achieving this goal in a collaborative process. The more focus and energy you give to this process, the more likely your success and sustainability. Each intern will see the connection of their role, their own purpose, and valuable contribution in their daily work in the garden to the mission and vision. The community will be there with you, for volunteering, and for financial and other support.

Gardens provide connection to the natural world

Food-related curricula and garden projects are built on the need to teach youth to make connections between people, land, food, and their community. These connections are missing in the lives of many of today's youth. But they are needed to understand the world, and an individual's connection to the natural world has been demonstrated to be an important element of overall health and wellbeing.[1]

[1] Darnton, 2014

As a learning experience, growing food engages all of the senses; youth benefit from a tactile relationship with the environment. The garden opens them up to the natural world and to new experiences, and this in turn may open their minds to new ideas and new prospects. For many our garden is their first opportunity to interact with the natural environment. Interns care for crops from seed to sale, which may be a new opportunity to experience the productive output of their work. Gardening teaches attentiveness to life, and the value of learning to do things that take time.

Gardening teaches the value of learning to do things that take time.

Our intern programs provide many local youth with their first job. They learn about applying for and having a job, about being on time, and accounting for their time.

At The Learning Garden, interns learn to plant and cultivate the garden, and harvest, pack, and store specialty crops safely to minimize risks of food safety hazards. At the Farmers Market, they learn the basics of cash handling and retail customer service, experience that may be useful in many future settings.

Our most recent intern program was committed to the goal of inspiring interns to further education and careers in agriculture. Interns learn about the variety of agricultural career options, and degree programs available at undergraduate and graduate levels that qualify graduates for agricultural careers.

You will find under Next Steps (p. 43) educational opportunities we've identified in our northern California region. Identify the same for your area. It's useful to find a range of opportunities, six month programs, two year programs, four year programs, some in an academic environment, some directly apprenticing on a farm.

There are also many food related career opportunities you may want to identify. Our programs have inspired more than one chef over the years.

Aims and Values

Teaching our practices teaches our values as well. Our sustainable gardening practices teach the communal stewardship of resources, and support the health of our local food system with fresh, healthful produce.

Our program's aims and values direct our efforts:

- To know each individual intern as well as we can, including any circumstances that might affect their wellbeing, behavior, and performance
- To maintain high but realistic expectations for each intern
- To ensure that interns are knowledgeable about and adhere to safe practices in the garden
- To enable the development of independence of each intern
- To celebrate and communicate intern achievements, enabling a positive impact on parents, the local community, and the interns themselves
- To offer opportunities for interns to learn in a multitude of different ways through a rich, and varied curriculum with individualized attention to ensure students of all experience and ability levels to find beauty in the garden and power in their own contributions to it
- To use individuals' interests, skills and experiences to enhance the education of interns and staff
- Through a variety of self-evaluation methodologies, seek to know our program results better and to inform focused garden and program improvements.

Over the years, we have delivered better on some of these aims and values than others. But defining and sharing values is a crucial step in ensuring the successful growth of all your people.

Every season we see the direct impact of our Garden on the people who visit and work there. Community volunteers engage with high school interns creating cross-generation interaction. Interns learn responsibility and accountability; they experience the value of working with their peers, staff, and volunteers to grow healthy, fresh food for their school and local community. The specialty crops that are grown and marketed by The Learning Garden are a result of a system focused on growing hard working, dedicated, responsible, and ecologically conscious people.

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Grow Soil

Organic farming begins with nourishing the soil, which leads to nourishing the plants, which eventually nourish our bodies.

Soil is a complex, living food web. Soil sustains life as the medium in which plants grow. The healthier the soil, the more nutrients are available to plants.

Anyone who has done even a little gardening understands that the quality of the soil is critical to the outcome of the harvest. But few understand that the soil harbors an uncountable number of living microorganisms, forms of fungi and bacteria. There are more living individual organisms in a tablespoon of soil than there are people on the earth.[2]

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Together with the familiar organisms such as earthworms, beetles and other insects, this community maintains soil quality, provides nutrients, breaks down toxic elements, and interacts with water and air to help maintain a healthy natural environment. Soil

[2] Soil Science Society of America

supports animal biodiversity, above and below ground. The organic matter in soils contains nutrients essential for thriving plant growth. Plants in turn help prevent soil erosion.

For these reasons and more, building and sustaining healthy soil is the centerpiece of our gardening efforts and our education programs.

Well-built soil is generally dark in color and full of organic matter, which comes from decayed or decaying organisms, like plant litter, compost, and manure. Well-built soil has more pores for water to penetrate into it. It holds onto nutrients, preventing them from leaching into the groundwater, and holds onto water like a sponge, giving plants time to use it. Soil and the vegetation it supports catch and distribute rainwater, playing a key role in the water cycle and supply.

Building soil is as critical to the environment as it is to our garden. According to the Soil Conservation Service more than 3 billion tons of topsoil are eroded from U.S. croplands every year, at a rate seven times faster than it is built up naturally.

Soil building is building with carbon. To build soil, we add plant material or animal waste. The organic matter contains carbon-containing compounds associated with living organisms. Some of these organisms survive for years, while others are consumed by microorganisms and lost from the soil as CO2.

As a topic, Soil opens up innumerable directions for your program in weather, climate science, and more, depending on your students' interests. Soil has a wider environmental and cultural significance. It is the platform on which we reside, the foundation and the materials for buildings, roads, and other built infrastructure. Soil contains and preserves artifacts of the past, the natural and human-cultural records that hold keys to how our human story evolved.

Healthy soil has been defined as an important means for mitigating climate change.[3]

Soil is one of our major pools of carbon, capable of acting as either a source or a sink. The goal is to leave it in a stable, solid form, thereby effectively removing greenhouse gas CO2 from the atmosphere. Healthy soil has been defined as one of the most important means for mitigating climate change[3].

The Learning Garden is over half an acre, with three large hoop houses, an orchard, perennial borders, annual vegetable beds, and a large, partially enclosed Shade House that provides workspace for processing our crops. Our garden is "beyond organic." We use no chemical or synthetic fertilizers, pesticides, herbicides, fungicides, etc. It is of utmost importance to us that we have a healthy environment for the plant, animal, and microbial world as well as for the humans who engage with it. We make compost onsite and sometimes bring in additional compost to amend the soil. We rely on diverse cropping systems to interrupt pest cycles and attract beneficial insects to predate on the harmful insects. We are facilitating a healthy natural soil system in order to produce the most nutritious fruits, herbs, and vegetables for our school and community.

In the context of the globe, our garden is a small area of land, but when you walk between the beds and hear bees buzzing and bird chirping and feel the living soil beneath your feet, it is easy to feel its impact and its power. By maintaining a demonstration site of responsible land stewardship, we are exposing youth and community to the beauty and vitality of a healthy, living ecosystem. We are a source of inspiration for a lifetime of ecologically responsible choices.

[3] (FAO, 2015)

Grow Food

Growing food both begins and completes the circle, nourishing our gardeners and interns, their families, our volunteers, our customers, and our community.

The Learning Garden grows specialty crops, the heart of every school and community garden. Specialty crops are "fruits, vegetables, tree nuts, dried fruit, horticulture, and nursery crops (including floriculture.)"[4] In the small growing space we have, specialty crops offer a variety of plants, create a diverse environment that supports and benefit from a variety of pollinators, and provide a high yield of quality produce.

Our garden and our programs teach growing food organically as a way to improve personal nutrition, care for those we feed, protect garden workers, and protect the environment by preventing soil erosion, and

[4] The Agricultural Act of 2014. To date, The Learning Garden has no nut trees.

ensuring water quality. Two key organic practices that ensure our customers delicious produce and support future generations are eliminating harmful chemicals, and promoting biodiversity.

Eliminate Harmful Chemicals

Pesticides are poisons; they are created to kill living organisms, and they harm pollinators, humans, and other living creatures exposed to them. The EPA lists as carcinogenic 60 percent of all herbicides, 90 percent of all fungicides, and 30 percent of all insecticides.[5] Children and farm workers suffer the most direct impacts of their use.

Pesticide exposure during pregnancy and childhood increases the risk of cancer among children. Children receive on average four times more exposure from their diet than adults to at least eight widely used cancer-causing pesticides in food.[6] Farmers and those who work with pesticides have higher rates of reproductive cancers, prostate among men, ovarian and breast cancer among women. A National Cancer Institute study found farmers exposed to herbicides had six times more risk than non-farmers of contracting cancer. The Environmental Protection Agency (EPA) has estimated pesticides - some cancer causing - contaminate the groundwater in 38 states, polluting the primary source of water for more than half the country's population.

"Across the important antioxidant compounds in fruits and vegetables, organic fruits and vegetables deliver between 20 and 40 percent higher antioxidant activity [than conventionally grown produce]."[7]

[5] EPA figures quoted in this paper may not be up to date. Some data we reviewed early in this project was no longer on the EPA website when we returned for additional details.
[6] College of Agriculture and Life Sciences, Cornell University. This 2002 study was the most recent peer-reviewed study on this we found.

Not only do organic farming practices protect the environment and people from these exposures, organic produce also delivers superior nutrition to consumers. Studies at Stanford University and elsewhere have found superior antioxidants in organically grown produce. "Across the important antioxidant compounds in fruits and vegetables, organic fruits and vegetables deliver between 20 and 40 percent higher antioxidant activity [than conventionally grown produce]."[7]

Promote Biodiversity

Species diversity is the natural state of an ecosystem. Greater species diversity supports sustainability for all life forms.

Monocropping is the agricultural practice of planting large plots of land with the same, single crop year after year, without rotating other crops on the land. Monocropping tripled farm production of wheat, soy, and corn between 1950 and 1970, when it became predominant in American agriculture. But the downsides are substantial, energy intensive, and dangerous due to its dependence on chemical inputs. Due to Monocropping and related methods U.S. farming uses 12 percent of the country's total energy supply, more petroleum than any other single industry. The lack of natural diversity of plant life leaves the soil lacking in natural minerals and nutrients, creating an ever-increasing need for chemical fertilizers. Single crops are also much more susceptible to pests, making farmers reliant on pesticides. Despite a

The variety in our garden ensures a healthy ecosystem and enables us to manage pests without harmful chemicals.

[7] Charles Benbrook, Washington State University's Center for Sustaining Agriculture and Natural Resources

tenfold increase in the use of pesticides between 1947 and 1974, crop losses due to insects continue to increase—due in part to some insects becoming resistant to certain pesticides.

In contrast, the variety in our garden ensures a healthy ecosystem and enables us to manage pests without harmful chemicals. We grow a wide range of vegetables, fruits, herbs, edible flowers, and plants to support bees, other pollinators, and beneficial insects. Our interns learn how diversity adds to the beauty of the garden as well as its importance to sustain the planet and preserve it for future generations.

Our interns get nutrition they need and enjoy new tasty food. All our programs have improved the nutritional awareness and diet of the participants. In our most recent SeedTRAY program, 60% of the interns studied reported improving their diet. The programs also kindle an interest in cooking among many of the interns. The SeedTRAY program also encouraged interns to consider agricultural careers, and gave them the opportunity to observe agricultural professionals in the program's gardeners, farmers they met at market, and those who gave workshops in the program.

The school cafeterias and nutrition programs we serve primarily want easy-to-prepare fruits and vegetables. Our produce primarily goes into the salad bar. We grow specific fruits and veggies each year to supply the local Harvest of the Month program, part of a statewide program to support healthy snacks and eating in schools. (See *Resources* for more information.) Specialty crops are best sellers at Farmers Markets, where interns sell our produce. We also sell to a few local commercial accounts. Having varied markets helps provide the garden program with a steady flow of financial support for garden supplies. And it enables us to donate hundreds of pounds of food each year to our local Food Bank and other food-serving nonprofit organizations.

Nothing convinces people of the value of fresh grown food more than a tomato or a strawberry still warm from the sun. Everyone can taste the difference.

We hope the information we've provided in this curriculum will help you bring this experience to more youth.

Internship Programs

Over ten years, our intern programs have varied. All have taught gardening; some have emphasized nutrition, sending interns into elementary classrooms to spread the gospel of fresh green vegetables. Our most recent program, SeedTRAY, introduced youth to agricultural career opportunities and supported the development of this curriculum. [8]

As the three-year program has progressed, we have faced a variety of challenges and have needed to adapt our program to serve the current student and staff climate. It is important to design your garden and internship programs to truly serve your youth and school community. Be realistic and be flexible.

Educational Garden Design

Growing for a school year takes some creative planning and infrastructure. Depending on your climate, often the primary growing season is the summer when school is not in season. This allows for the possibility of summer intensive internship programs in which students get to spend multiple hours a day working in the garden. Unfortunately, this also means that during the school year, it is important to have some staff to keep the garden operating and productive while interns are juggling garden hours with school, homework, sports, etc. It is important to plan garden production to correlate with your available labor forces.

Important elements in an educational garden design:

- Wide paths to accommodate all accessibility levels and large groups
- Outdoor gathering spaces (i.e., benches, tree rounds, chairs, tables)
- Chalkboards/whiteboards

[8] SeedTRAY was supported by the Specialty Crop Block Grant Program at the U.S. Department of Agriculture (USDA) through Grant 14-SCBGP-CA-0006. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA.

- Large toolshed & multiples of most tools
- Pleasing aesthetics (i.e., keep things tidy, clean, & organized)
- Signage
- Recognizable fruits and vegetables
- Edible flowers

Guidelines

Students lead busy lives and incentives are critical to attracting and retaining interns.

- Incentive opportunities will vary with your circumstances. Possibilities will depend on funding:
    - Stipends upon completion of hours
    - Hourly wage
    - Independent study units through their school (work with counseling office)
    - Extra credit for classes (work with individual teachers)
    - Reference for future job applications
    - Lots of fruits and veggies to take home!
- Be adaptable to students' schedules and the academic calendar. Give students something to do on school vacations and let them complete as many hours as they can.
- Keep things fun and tasks diverse
- Let the garden be a safe space for all, a space for all to find their power

Recruitment & Retention

Our interns during the school year are primarily students who are not doing a sport and already have some kind of interest in agriculture or gardening. We do announcements in the school bulletin; we visit relevant classes (i.e., agriculture classes, science classes, etc.), and ask people to spread information about the internship by word of mouth. The high school counselors refer people to our program, and past interns tell their friends. We have used posters and classified ads. During the summer, most interns were incoming freshman who wanted an opportunity to get to know the school and have something to put on their resume for future job applications. We promoted our program to the 8th grade garden classes at the middle school at the end of the year.

The internship is after school or during summer, so people are always there by choice. Most people who have been talked into participating inevitably quit. We often correctly predict this outcome when students are escorted to our office door by a hovering parent. We found it important to keep an open dialogue with students about their experience, and adjust to fit their needs and desires.

Social Media:

Many people lead incredibly busy lives. Not everyone can find time to step foot in the garden on a regular basis, but many people want to keep up to date on what is going on. Facebook, Instagram, and our website are powerful tools for us to maintain community interest in day-to-day happenings in the garden. Every post and engagement contributes to a network of support that we can then use to spread information about events, workshops, volunteer opportunities, and fundraising needs.

Funding Your Program

Grant funding is a topic in itself about which every fundraiser needs to develop knowledge and experience[9]--but it's beyond the focus of this paper. However, it's neither practical nor possible to sustain most programs entirely on grants for extended years.

The intern program we describe herein emphasizes the practical employment aspects as well as agricultural experience. For most interns this is a first employment experience. They learn to apply for a job. They are interviewed. They learn to account for their time. They learn to measure, weigh and report on what they do. They learn cash handling going regularly to market. And they meet business professionals from all aspects of the food system and industry.

In an economy in which there are few introductory job opportunities for youth, the program has proven to be of value to the community and local businesses. So when we confronted how to sustain the SeedTRAY program, or a next stage development of it, without a large supporting grant, we looked to the business community to support our interns.

With sponsorships in the range of $250 to $500, we were able to fund 10 interns in our current summer program. Ten has proven to be the ideal number of interns for our garden and staff. By focusing on sustaining the interns, and with the specific target of ten, we gained both monthly sustainers and business sponsorships from businesses who had never given us funds before primarily, we discovered, because we had never asked.

We encourage you to develop a fundraising plan that uses all opportunities, including individual donors, sustaining donors, business sponsorships, social media, grant opportunities and events (if you must;).

Depending on how much you produce, the revenue stream from sales will complement those funds, but are unlikely in a small teaching garden to ever be adequate to sustain the operation on its own. That makes developing fundraising capabilities critical to sustaining your programs.

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[9] We successfully used the practical approach to grants of Harvey Chess, *Functional and Funded.*

Curriculum Topic Sheets

Let your garden be your guide!

The Learning Garden, watercolor by Suzi Marquess Long, 2011

It is important to stay flexible! This curriculum is a resource. Let the garden be your guide. It will tell you what it needs and when. You can and should plan and structure--as that will prepare you best for when plans inevitably change.

We have found that it is best to keep "lectures" brief and focus on emphasizing concepts while we are out in the garden working with the interns. Remember, you are a facilitator of educational experiences. Learning opportunities happen best in the garden while people are moving, doing, seeing, and experiencing.

Allow any momentum that builds to carry projects through and do not be afraid to redirect anyone who is hindering group progress. There is always something else to do in a garden.

These topic sheets are important gauges for what interns should be learning. They are meant only to be an introduction. If you want to go deeper on any topic, or are looking for alternative approaches, additional online resources are extensive. We have identified some sites we like in *Resources*.

Compost

1. Compost Overview
    a. Composting is a biological, chemical, and physical process that transforms plant waste from your garden into a stable source of nutrients for plants, with soil microbes and organic material to enhance soil structure.
    b. Almost any plant-derived waste from your garden can go into your compost. People often suggest avoiding adding cooked food in order to keep rodents less interested. Rodents are often present in any agricultural system. The best way to keep them from becoming a nuisance is to keep your compost in animal-proof containers and/or to turn your piles frequently. This will discourage critters from making homes in your toasty piles.
2. Different Types of Composting
    a. Hot composting: this method generally 2 parts mature (carbon) and 1 part immature (nitrogen). Ideal temperature is between 140-155 F. Turn regularly and keep moist. Compost can be complete in as soon as a few months. Requires less time and more labor.
    b. Cold composting: Put your weeds and waste in a pile and wait! Takes 1-2 years for finished compost. Requires minimal labor or maintenance.
    c. Vermicompost: Great for in the classroom! Worm bins can be made out of plastic storage tubs and are a great way to show students how worms turn lunch leftovers and shredded paper into dirt! Or close to that…worm castings are nutrient rich additions for gardens and look very similar to dirt.
3. Why compost?
    a. Gardening is inherently extractive. As plants grow and as we harvest them, we remove carbon and nutrients from the soil

ecosystem. Compost returns any "waste" into a stable soil enhancer—both structurally and nutritionally.

b. Compost acts as a sponge in your soil to help retain water, resulting in less overall water usage.

c. Compost adds diversity to the soil microbiology, which creates a more resilient system to deal with plant disease.

d. Composting is the cheapest way to rid your garden of crop residue and turn it in to nutrients for the soil. Win win!

Activity: Build a Compost Pile

1. Gather mature material (i.e., carbonaceous material…stuff that is crunchy. Ex.: straw, corn stalks, sunflower stalks, dry leaves, etc.) and immature material (i.e., nitrogenous material…stuff that is soft. Ex.: cut grass, green leaves, damaged fruits/veggies, etc.).
2. Be sure to place a few large stalks/branches at the bottom to encourage air-flow throughout the pile. Add mature and immature material in even and alternative layers, a few inches at a time.
3. Every few layers, water with a garden hose as though you were watering a garden bed…think of mimicking a "gently spring rain." Make sure to get the corners and the edges! The goal is a moisture level comparable to that of a "freshly wrung out sponge," i.e., wet but not too wet!
4. It is also important to add a few layers of garden soil or previously made compost to the pile to inoculate it with microbial activity. If you are adding lots of roots covered in soil to your piles, you can probably skip this step.
5. Your pile should be at least 3′ x 3′ x 3′. Anything bigger than 5′ x 5′ x 5′ is hard to turn. Try the best you can to keep the pile cube shaped. This maximizes internal and insulated volume to maximize the decomposition speed.
6. Keep a long thermometer in your pile! It can reach exciting temperatures. Once the temperature drops to ambient, turn the pile and add more water if it seems dry. You should notice another spike in temperature. If you have the person power—or a tractor—you can keep turning piles and have a finished product in as little as a few months. Otherwise, have patience! In anywhere from 6 months to 2 years you will have beautiful compost for your garden.

Soil Health

Healthy Soil is the center of our garden practices and curriculum. Conversations about healthy soils should be incorporated into ALL garden projects and tasks. Without soils, we would not have food to eat, clothes to wear, ecosystems to support us, or clean air to breathe. As the climate continues to change and our planet is tasked with more and more human life to support, care and attention to soils will become even more important. Even encouraging simple observations and appreciation of soils over the course of the internship could have a long-term beneficial impact on agricultural systems.

1. Soil Identification
    a. Discuss the differences between sand, silt, & clay soils
        i. Sand: largest particle size, poor water retention, good drainage, warms & cools quickly, generally requires more frequent compost amending, generally easy to dig & plant
        ii. Clay: smaller particle size, good water retention, poor drainage, stable soil temperatures, good nutrient retention, can be difficult to work unless it has adequate levels of organic material present
        iii. Silt: medium particle size, generally the result of alluvial deposits, high in nutrients, easy to work
    b. Most soils are a mixture of sand, silt, & clay (see below for the "Mason Jar Soil Test")
    c. Encourage observation of the soils students interact with at home, on the weekend, and on field trips

2. Soil Moisture & Tillage
    a. Try to only do active soil work when soil is similar dampness to a freshly wrung out sponge (demonstrate to interns how to take a handful and squeeze into a ball; it should maintain shape but crumble easily)
    b. When soil is too wet or too dry, you risk destruction of pore space and soil aggregates, two elements of soil ecology that are critical for maintaining proper plant health (dry soil will not maintain shape when squeezed into a ball; wet soil will form a ball but won't crumble and will leave wet stains on your hand)
3. Soil Ecology: What is soil?
    a. Minerals
        i. i.e., ground up "parent material" or "rock flour"
        ii. dictates soils ability to hold on to macro & micro nutrients
        iii. influences plant available nutrients
    b. Pore space
        i. air + water = pore space
        ii. pore space is where root growth happens. More compaction means less pore space and less room for root growth.
    c. Organic Matter (OM)
        i. ideal agricultural soils have 3-5% OM
        ii. OM supports macro & micro organisms who help make nutrients available for plant to uptake
        iii. OM is the easiest part of a soil for gardeners & farmers to influence & affect

Activity: Soil Mason Jar Test

See ***References*** for link to full article from www.offgridquest.com.

Day 1.

1. Use a clear, clean, empty jar with a tight lid. (pint or quart mason jar)
2. Fill the jar about half full of garden soil.
    a. Have one example pre-made to show students. Take an aggregate sample (i.e., a compilation of soils from all over the garden)
    b. Have students work individually or in small groups to sample specific areas where they think the soils may be different.
    c. Suggestions for comparison: annual veggie bed, a perennial zone, a pathway, inside a greenhouse, under mulch, an open field, etc.
3. Fill the jar nearly to the top with water. Leave room for shaking.
4. Tighten the lid and shake the jar for several minutes so that all the particles are in suspension.
5. Set your mason jar aside for several hours or overnight, so the particles have a chance to settle. They will separate into clay, silt, and sand layers.

Day 2.

(For details on identifying soil types: Center for Agroecology & Sustainable Food Systems "Teaching Organic Farming & Gardening" Unit 2.1, Soils and Soil Physical Properties).

Rough Guide:

20% clay, 40% Silt, 40% sand = Loam
30% clay, 60% silt, 10% sand = Silty Clay Loam
15% clay, 20% silt, 65% sand = Sandy Loam
15% clay, 65% silt, 20% sand = Silty Loam

Discuss with students how different soil types could affect plants. Brainstorm possible actions to take to manage the amount of organic matter in soils.

Greenhouse Growing

1. Why garden in a greenhouse?
    a. Greenhouses create a more stable environment for plant propagation (see next topic sheet).
    b. Gives students an opportunity to work in the garden even when the weather is challenging
    c. Makes it possible to grow plants that otherwise wouldn't survive in your climate
        i. For example, on the Mendocino Coast it is difficult to grow heat-loving crops outside. A greenhouse makes it possible to grow basil, tomatoes, cucumbers, and peppers—crops that people love to eat.
        ii. It also can extend the productive capacity of a garden space into the winter and allow for year round supply of produce
2. Things to think about
    a. Pests & Disease
        i. Because you will likely grow the same plants in the greenhouse every year (i.e., tomatoes and/or cucumbers), it is important to rotate the crops from bed to bed to interrupt pest and disease cycles.
        ii. Greenhouse design must include doors/vents on either end for cross-ventilation to help prevent stagnant air.
    b. Irrigation
        i. Water access inside of the greenhouse is helpful for drip tape, hoses, or sprinklers.
    c. Layout
        i. It is important to maximize internal growing space to take advantage of the garden infrastructure

ii. It is also important to have proper trellising and wide enough pathways to keep the space accessible for folks working in the space.

3. How to purchase or build one?
    a. Funding
        i. Grants
        ii. Crowd-sourced fundraising
        iii. Private donations
    b. Labor
        i. Local community service organizations such as Rotary, Lions, Kiwanis, etc.
        ii. Staff, volunteers, & interns: with appropriate management and/or skills, this can be a great opportunity to expose students to construction.

Propagation

1. From seed
    a. Germination: when the seed sprouts and grows into a plant
    b. Seeds need moisture, light, and contact with a medium in order to germinate
        i. Once seeds have germinated and have above
    c. Most annuals and biennials grow best from seed
        i. Annual: a plant that germinates, flowers, and makes seed all in one year. Ex: cilantro
        ii. Biennial: a plant that germinates in year 1, grows, and then flowers and makes seed in year 2. Biennials often die back after this point. Ex: carrot
    d. This is a form of sexual propagation. Pollen from one plant or flower must travel to another plant or flower via insects, animals, or air.
        i. Maintains genetic diversity
        ii. More variation in plant characteristics
2. From cuttings or division
    a. Most perennials propagate best from cuttings or divisions
        i. Perennial: a plant that lives longer that two years. Ex: artichoke.
    b. This is a form of asexual propagation. Each cutting or division is genetically identical to the "mother" plant.
        i. Maintains stable traits

    Cuttings/divisions often grow faster and stronger than the same plant propagated by seed.

Transplanting & Direct Seeding

1. Transplanting: transferring seedlings from the greenhouse to the field or from a pot into a bed
    a. Advantages
        i. better control of temperature, humidity, and soil moisture in a greenhouse
        ii. protection from the elements & season extension
        iii. crops get a head start on weeds
    b. Disadvantages
        i. Need greenhouse infrastructure and regular attention
        ii. Need to transplant at optimal time otherwise plants will be stunted, slow to mature, quick to bolt (go to flower), or otherwise experience transplant shock. Transplant shock can also result from handling plants roughly. Teach students to handle plants gently, dig the right sized holes, and not to bury the growth tip of the plant (which varies depending on what it is)
        iii. Suggestion! Purchase transplants from a local nursery or other source until your school garden greenhouse infrastructure is adequate. Eventually, if your transplants are high quality, they can be an income generator through plant sale fundraisers and Farmers Market.
2. Direct seeding: planting seeds in the place where they will grow
    a. Advantages
        i. Good for crops that do better at a high density or germinate quickly (i.e., baby spinach or radishes)
        ii. Good for root crops which prefer to not have taproots disturbed during transplanting (i.e., carrots)

    b. Disadvantages
        i. Requires lots of water and proper bed preparation
3. Could have unpredictable germination
4. Transplant or direct sow?
    a. It depends!
    b. In general, transplanting in an educational garden setting is the best. There are usually plenty of hands to engage in transplanting and/or greenhouse sowings.
    c. Experiment with what works well with your soil type and irrigation system

Activity: Transplanting & Direct Sowing

1. Take students on a walk around the garden and talk about different crops that have been transplanted or directly sown. Observe and discuss health and vigor of crops transplanted and directly sown.
2. If you have a greenhouse, do a greenhouse sowing activity. Discuss advantages & disadvantages of sowing in a greenhouse.
3. Directly sow something outside and discuss advantages and disadvantages.
4. If possible, have students conduct an experiment. Choose a quickly maturing crop (such as radishes or a baby green). Directly sow a patch and sow some in the greenhouse. Transplant when appropriate. Have students make & track observations from seed to harvest:
    a. What method was faster? Keep time records for each method (sowing, thinning, transplanting, weeding, and harvesting).
    b. When do the seeds emerge?
    c. Assess vigor of plants at various stages.

    What is the quality of the overall harvest? Taste and quantity.

Basic Botany

Learning the basics of botanic nomenclature, and the significance of family relationships among plants is useful to the amateur gardener and vital to anyone with a professional interest. Family relationships are critical in understanding many aspects of the garden, particularly pest control.

1. Common food crop plant families & characteristics
    a. Brassicaceae
        i. Also known as, brassicas or cole crops. Includes: kale, mustard, arugula, broccoli, cauliflower, collards, mizuna, bok choi, tat soi,
        ii. Flowers have four petals attached to a stalk by a fine petiole. Flowers often yellow or white and edible. Delicious addition to salads, great attractor of beneficial insects, and ample food source for bees. Leaves—what we often eat—include many shades or greens and purples and come in all shapes.
    b. Solanaceae
        i. Also known as, solanums or nightshades. Includes: tomatoes, peppers, eggplant, potatoes, okra
        ii. Foliage is toxic, do not ingest. Usually prefers warm to hot growing environments.
    c. Chenopodaceae
        i. Also known as, chenopods or goose foot family. Includes: chard, spinach, amaranth, and quinoa.
        ii. "goose foot" refers to leaf shape. Foliage is highly nutritious
    d. Poaceae
        i. Grass family. Includes: corn, wheat, rice

e. Legumes
    i. Bean family. Includes: soy, peanuts, and beans.
f. Other
    i. Rosaceae. Rose family. Includes: apples, strawberries,
    ii. Prunus. Includes: cherries, plums, apricots, peaches
    iii. Polygonaceae. Includes: sweet potato, buckwheat,
    iv. Asteraceae. Includes: lettuce, sunflowers

2. Practice identifying plants in the garden on a regular basis…including weeds! At least place them in a family. Many weeds are edible and medicinal. Try them with the students!

Activity: Plant Walks & ID

Make it a habit to regularly walk the garden with the students and contextualize small tasks within the bigger picture.

Have students identify as many plants along the way as possible. Have them think about how many different plant families they eat from.

Marketing Produce

Marketing planning depends on the structure and purpose of your garden. Here's how we view it.

1. Advantages of attending a Farmers Market
    a. Facilitates a direct community relationship between the garden program and the public.
    b. Customers see who grows their food (interns & staff) and interns and staff sees who will eat it.
    c. Can compare quality of produce to other farms
    d. Creates an opportunity to teach basic retail customer service skills and money handling procedures—skills that are useful in many future job settings
2. Disadvantages of attending a Farmers Market
    a. Takes a lot of time away from being in the garden
    b. Can be challenging to predict how much of each item will sell. Important to balance a bountiful display with too much excess
        i. "Pile it high and watch it fly": people will be more likely to purchase items if there is a sense of plenty
        ii. Unsold produce can go home with interns or be donated to food banks/soup kitchens
3. Alternatives to a Farmers Market
    a. Farm stand at the school for students, staff, and parents
    b. Pre-packaged produce boxes sold to on-campus staff or other community (following the CSA—community supported agriculture—model)
    c. Focus production on cafeteria needs & wants
    d. Sell to local restaurants
    e. Get creative!

Activity: Marketing Observations

1. While attending market to sell produce from your garden, provide students with scavenger hunts, questionnaires, or survey questions to facilitate observation at markets.
    a. Goals:
        i. Foster interns' powers of observation with appropriate activities (see Questionnaire)
        ii. Nurture creative thinking by discussing the implications of their observations
        iii. Encourage students to interact with local farmers and food producers.
        iv. Keep them busy during slow times at market

2. Task students with identifying grocery stores or local restaurants that are supporting local farmers and food producers. Discuss why this is or isn't possible in your community.

Farmers Market Questionnaire

Please evaluate the following:

How does Food Forest produce compare in **QUALITY APPEARANCE** to other vendors?

Salad Mix

Tomatoes

Sugar Snap Peas

Cucumbers

How does Noyo Food Forest produce compare in **PRICE** to other vendors?

Salad Mix

Tomatoes

Sugar Snap Peas

Cucumbers

Is our booth place in the Market an advantage or disadvantage?

Advantage _____ Disadvantage _____

Do you have suggestions for how to improve our booth?

NAME _____ DATE _____

Garden Design

1. Permaculture is a design framework developed to create productive and regenerative ecosystems. Even if your school garden is not a "permaculture garden," it likely incorporates some of the principles. The Permaculture Principles provide a holistic overview for discussing garden design and maintenance.
2. Twelve Permaculture Principles
    1. Observe and interact
    2. Catch and store energy
    3. Obtain a yield
    4. Apply self-regulation and accept feedback
    5. Use and value renewable resources and services
    6. Produce no waste
    7. Design from patterns to detail
    8. Integrate rather than segregate
    9. Small, slow solutions
    10. Use & Value diversity
    11. Use edges & value the marginal
    12. Creatively use & respond to change

The Permaculture Principles are defined as: **"**Thinking tools, that when used together, allow us to creatively re-design our environment and our behavior in a world of less energy and resources."

Find out more about them at:
https://permaculturepriciples.com/principles/

Activity: Garden Mapping

Introduce the Permaculture Principles and discuss elements relevant to the design of your school garden or other gardens/farms students have experienced.

Option 1: Have students work on their own or in groups to make a map of the school garden and identify as many of the principles as possible on their map.

Option 2: Have the interns work on their own or in groups to design their own farm or garden and incorporate as many of the design principles as possible.

Provide art supplies and large sheets of paper. Let the students get creative and have fun with the project! Have each individual or group present their design to the rest of the group.

Seasonal Task Lists

Seasonal tasks will vary greatly depending on local climate and program. Below is a very general outline of what we focused on. Add your own tasks.

Fall

- harvesting fall crops
- harvesting seeds
- clearing summer crops
- planting cover crops
- extra attention to compost piles
-

Spring

- sowing summer vegetables
- some direct sowings
- sowing perennials & herbs
- compost care
- bed preparation
-

Winter

- seed cleaning
- infrastructure projects
- cleaning & organizing
- harvesting
-

Summer

- tomato trellising
- harvesting
- Farmers Markets
- (late summer) plant fall & winter garden
- preserving harvested crops by drying or other methods
-

Rainy Day Activity Ideas

Some days really are too rainy (or snowy for you?) to work in the garden. We make these days an opportunity for varied learning experiences. We try to include discussions about what we are doing, and why, and how, as often as opportunities occur. Add you own ideas below.

Indoor Activities

- Greenhouse tasks
- Indoor propagation
- Seed processing & organizing
- Garden journaling
- Garden mapping & design
- Crop planning exercises
- Art projects
- Videos
- Reading time
-

Films

We recommend watching films with the students and providing a few questions they have to answer to help keep focus & attention. Often, we would pause the film to have a dialogue, or we would wait until the end and together talk about what we watched.

Suggestions:

- Ron Finley TED Talk
- Botany of Desire
- Planet Earth episodes
- GMO OMG
- Symphony of Soils
- Women on the Land
- Ruth Stout Garden Videos
-

An Applied Educational Experience

Contextualizing intern experiences

Many high schools have been under immense academic performance pressure and have had to make difficult choices regarding vocational skills training opportunities for their students. Garden-based education gives students a chance to apply what they are learning in science, math, and even English classes.

Following plants from seed to sale requires skills relating to project management, responsibility, and interaction with co-workers and the public. Many students who participate in our program may not consider college directly out of high school a viable option. This program gives them relevant and pertinent job skills, which may help them in further employment during high school, and employment after high school graduation.

We aim to contextualize the internship experience in our community, which currently has an expanding potential for job opportunities in food and agriculture. Throughout the program, we host workshops and guest speakers and take our interns on field trips to local farms, educational gardens, and Farmers Markets. Interns interact and learn from local farmers and others in agricultural businesses. Interns see what careers exist in this field, and the local community connects with and supports the work that we do.

Examples of guest speakers, workshops, and field trips included in our schedule:

- Local farm tours
    - At one farm we visited, the interns helped with a strawberry plant out; it became an opportunity to discuss soil by comparing ours to the farm's (the interns judged ours superior)
- Visits and work parties at local school gardens

- Propagation workshop with local school garden teacher
    - A local nursery person might fill this role, or a member of the local Garden Club
- Safe food handling presentation with our school district's Food Services Director
- Farmers Market business practices with the manager of the local Farmers Market
- Cash handling, counting and record keeping with a local bookkeeper
- Tour of produce department of a large local independent grocer
- Workday at local community gardens
    - We visited local gardens at the senior center, and one at an organization for adults with special needs
-

Intern Applications & Assessments

When interns are accepted into the program, we do a one-on-one entrance interview and an intake survey. The interview allows the Garden Manager and intern to get to know each other and establish a working rapport. The intake survey allows us a long view of the impact of the program on each intern.

We do surveys or inquiries whenever we need to check in with the intern's experience or if we would like them to reflect on a particular part of the work they have been doing. We send the students into the garden to find a quiet spot to sit alone to reflect on their role in the transformation of the garden, the sale of vegetables, or anything else we have been doing lately. Our goal is to encourage recognition of their own power as contributors to our local food system, something that could continue beyond the program. Intern stories also are important for sharing the story of our work with the community, which generally translates to positive fundraising and promotion.

In all our programs we gather information about our interns to ensure we know them and know what is going on in their lives. Of particular interest to us are the intern's diet and their interest in gardening and farming.

Our SeedTRAY program was designed to encourage interns' interest in agricultural careers. And we gathered data to measure how our program influenced both their diet and their career plans. We gathered varied information from different groups, but the core questions about nutrition and career goals were always there. The sample questionnaires at the end of this section may help you decide what and how to track information on your interns.

For our summer programs—when the most competition for the program is greatest—we found useful an application process used successfully by numerous youth organizations around the country. Each intern is responsible to identify appropriate unrelated adult references, request their support and present them with a reference form. Among its benefits, this process helps identify the serious applicants. And the information gathered helps us work with each youth and judge the impact the program has on them. Samples of the forms used are at the end of this section.

Post-internship: Next Steps

Throughout the SeedTRAY program we discuss with interns their future plans and career thoughts.

We promote local agriculture education programs including but not limited to:

- Mendocino College Agriculture Programs
    - https://www.mendocino.edu/department/agriculture

- Grange School of Adaptive Agriculture
    - http://www.school-of-adaptive-agriculture.org/program/

- Santa Rosa Junior College
    - https://ag.santarosa.edu/

- Ameri Corps & Food Corps
    - https://foodcorps.org/
    - https://www.nationalservice.gov/programs/americorps

SAMPLE INTERN FORMS & QUESTIONNAIRES

Intern Reference Form

FAQ: Intern Summer Intensive

Intern Intake Questionnaire

Internship Completion Questionnaire

Recruitment Poster

INTERN REFERENCE

SeedTRAY Summer Program Application

Noyo Food Forest • 300A Dana Street • P.O. Box 974 • Fort Bragg, CA 95437

TO BE COMPLETED BY APPLICANT:

1. Write YOUR NAME HERE: _____
2. Give this form to an adult who knows you well but who is not a member of your family, such as a teacher, coach, employer, minister, etc. You may make copies of this form to give to more than one adult.
3. Explain to that person why you want to work for Noyo Food Forest.
4. Ask that person to fill out the reference and send it to Noyo Food Forest.

ALL REFERENCES & APPLICATIONS due by June 15, 2016

TO BE COMPLETED BY REFERENCE WRITER:

Thank you for taking the time to offer your perspective on this youth!

Please follow these steps:

1. Read the fact sheet included with this reference form.
2. Fill in the requested information below and answer the questions on the other side of this form.
3. Mail this reference form to: Attn: SeedTRAY, Noyo Food Forest, P.O. Box 974, Fort Bragg, CA 95437.

Or, scan it and email it to admin@noyofoodforest.org. If you have any questions, contact us at 707-964-0218.

Name: _____Phone: _____

Title: _____ Email: _____

Organization/School: _____

Address: _____

Would you like to be contacted about helping to recruit other youth for Noyo Food Forest's youth programs? Yes: ❒ No: ❒

Noyo Food Forest's purpose is to work with a diverse group of youth. We are looking for youth who want to make a substantial commitment of time and energy. Within this group, we accept young people at all levels of achievement. There is no right answer to the questions on this form! Please be honest and accurate in your assessment of the youth, as it will help us build a well-rounded summer program.

INTERN REFERENCE

TO BE COMPLETED BY REFERENCE WRITER (cont'd):

How long have you known this young person and in what context?

Is this young person at risk of being required to attend summer school? Yes: ❒ No: ❒

Compared to other youth, how would you rate this young person in terms of:

	No Basis	Below Average	Average	Very Good	Outstanding
❒	Maturity	❒	❒	❒	❒
❒	Leadership	❒	❒	❒	❒
❒	Integrity	❒	❒	❒	❒
❒	Concern for others	❒	❒	❒	❒
❒	Making & upholding commitments	❒	❒	❒	❒
❒	Behavior	❒	❒	❒	❒
❒	Working in groups	❒	❒	❒	❒
❒	Accepting direction from adults	❒	❒	❒	❒
❒	Overall	❒	❒	❒	❒

Please use the space below (or additional pages if desired) to add comments regarding your answers above or to offer any additional information, which you feel is important about this young person.

Frequently Asked Questions: SeedTRAY Summer Intern Intensive

What is SeedTRAY?

SeedTRAY is Specialty Crop Education and Entrepreneurial Development for Transition Age Youth, an ongoing training program of Noyo Food Forest for youth of Fort Bragg and Mendocino coast communities. SeedTRAY is supported by the Specialty Crop Block Grant Program at the U.S. Department of Agriculture (USDA) through Grant 14-SCBGP-CA-0006. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA.

SeedTRAY offers experiential training to engage and inspire youth while increasing use of locally grown vegetable and fruit crops, particularly in school cafeterias. Youth will learn to grow specialty crops and to sell the specialty crops produced while developing important leadership, teamwork, diversity, and career skills.

The program delivers Summer Intern Intensives and seasonal after-school internships during the school year.

How is the Summer Intern Intensive Unique?

The Summer Intern Intensive is a full-time 4-week program that includes hands-on garden work of all kinds and weekly presentations or demonstrations, with guest speakers on gardening and farming, nutrition, and business topics. Summer Interns will:

- Work full-time for one of two four week programs, from mid-June to mid-July and from mid-July to mid-August
- Learn to grow vegetables on our compact farm, The Learning Garden at Fort Bragg High School
- Help manage our Farmers Markets on Wednesday
- Attend weekly Working Knowledge presentations/demonstrations by local professionals on topics ranging from building great soil, to food safety, to the business challenges of specialty crop production.
- Participate in preparing and serving a weekly team and staff lunch

Who is eligible to participate?

Youth aged 14-19 are eligible to participate. Applicants must be 14 by January 1 of the year of application and have completed 8th grade. No exceptions will be made. Youth who live in and around the communities we serve are encouraged to participate.

What is the work like?

Every day is a little different. SeedTRAY participants farm land at The Learning Garden at Fort Bragg High School (weeding, harvesting, washing, planting), sell produce at farmers' markets, prepare and serve lunches, attend demonstrations and presentations. Each day is a mix of fieldwork, workshops, and community-building activities.

How long is the workday?

The workday is from 10 a.m. to 3 p.m., four days a week. The workweek runs Tuesday through Friday. Youth must bring a lunch to work. Beginning the second week, a team lunch will be produced at the garden by all the interns on Friday.

What are the dates of the program?

The first of two four-week sessions, with up to ten students each, runs from Thursday June 16 to July 15. The second four-week session begins July 18 and ends August 12.

*Participants **must** be able to attend the entire duration of the 4-week session.*

How much are youth paid?

The stipend for the 4-week Summer Intensive is $400, paid on completion of the program. High school students also earn community service hours.

Can I attend both 4-week sessions?

We encourage you to apply for both, but we may not be able to accept you for both. Depending on availability, you may be accepted in one or the other, or both.

How do youth get there?

Our farm and office are a short walk from public transportation. Summer youth passes are available from Mendocino Transit Authority and will be reimbursed by SeedTRAY.

What should I wear for work?

Be ready to get dirty. We work in all kinds of weather, including rain. It is important to dress comfortably and to wear layers to adapt to the changing weather conditions near the coast. Even our classroom is a covered but open air workspace.

Close-toed shoes are mandatory.

How do I apply?

Application forms are online at www.noyofoodforest.org. Application forms are available at Fort Bragg High School, Mendocino High School, the Safe Passage Office, in the Dietrich Center, Dana Street, the Noyo Food Forest Office, 300A Dana Street.

In addition to the application, applicants must arrange to have submitted on their behalf, at least one, no more than three, personal references from adults not in their family. A Reference Form and a Fact Sheet for Reference Writers are available for the applicant to give the person from whom they request the reference. Details are on the Intern Reference Form.

Application materials will be accepted beginning May 8 through May 26, 2015. Applications should be mailed to Noyo Food Forest, P.O. Box 974, Fort Bragg, CA 95437

Who can be contacted for more information?

info@noyofoodforest.org or (707) 964-0218

SeedTRAY Intern Entrance Questionnaire

INTERN NAME: _____

1) How did you hear about the SeedTRAY program?

2) Do you have career goals? ___ Yes ___ No

If so, what are they?

3) Have you ever considered agriculture as a career path?

1_____2-_____3-_____4-_____5

not at all somewhat definitely

4) What is your favorite subject in school?

What do you like about it?

5) How often do you eat three meals a day?

1_____2-_____3-_____4-_____5

never sometimes every day

6) Do you believe your diet is healthy?

1_____2-_____3-_____4-_____5

not at all somewhat definitely

7) How many servings of fruits and vegetables do you eat per day?

SIGNATURE: _____

DATE: _____

SeedTRAY Internship Completion Questionnaire

Intern Name: _____

Date of Exit Interview:_____

How seriously have you considered a career in agriculture?

1-_____2-_____3-_____4-_____5

not at all somewhat definitely

How often do you eat three meals a day?

1-_____2-_____3-_____4-_____5

not at all somewhat definitely

Do you believe your diet is healthy?

1-_____2-_____3-_____4-_____5

not at all somewhat definitely

Has your diet improved as a result of this program?

1-_____2-_____3-_____4-_____5

not at all somewhat definitely

Knowledge self assessment

Farming Literacy

I know how to talk about growing fruits and vegetables. I have a vocabulary to discuss such things as compost, vegetable crops, and farm/garden systems.

1-_____2-_____3-_____4-_____5

not at all somewhat definitely

Farming as a Business

I understand what it takes to get a crop from "seed to sale." I feel comfortable selling crops to customers.

1-_____2-_____3-_____4-_____5

not at all somewhat definitely

Food System

I can define "food system." I recognize the work we do at Noyo Food Forest is a part of our local and global food system. I have been introduced to ways that our food system affects individuals and communities in this country and around the world.

1-_____2-_____3-_____4-_____5

not at all somewhat definitely

Ecological appreciation

I appreciate small details of the ecosystem in which I work. I understand that all living things are interconnected and that agriculture is a way to get in touch with natural patterns and processes.

1-_____2-_____3-_____4-_____5

not at all somewhat definitely

FOR DISCUSSION WITH MANAGER and/or INTERVIEWER

What did you like best about the program?

What would you suggest to make the program better?

Is there anything else you'd like to share/discuss?

Intern Signature

Exit Interview done by:

Teen Employment Opportunities

SEEDTray Intern Program

at The Learning Garden

at Fort Bragg High School

Learn and earn money $$ this summer…

- **LEARN HOW TO GROW tomatoes, lettuce, squash, peppers, chard, kale, carrots, broccoli, apples, blueberries, flowers and lots more!**
- **SELL WHAT YOU GROW at the Farmers Market**
- **LEARN BASIC JOB SKILLS useful for your future jobs**
- **LEARN ABOUT CAREER OPPORTUNITIES in Agriculture**
- **EXPECT TO WORK HARD in The Learning Garden**

Sessions begin June 16, 2016 & July 18, 2016

More information at **noyofoodforest.org**

Applications available: Fort Bragg High School, Safe Passage, Mendocino High School, & Noyo Food Forest, 300A Dana Street, Fort Bragg, CA 95437 **707 964-0218**

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Intern Stories

Antonia's Story

Antonia with FBUSD garden teacher Julie Castillo

Antonia has the longest tenure of any intern. She could easily be presented as the star of the internship at The Learning Garden. Not for duration, but because her skills have grown; her enthusiasm has grown; her leadership among the other interns has grown; and she has grown in the many ways of coming into herself appropriate to her stage of life.

A recent graduate of Fort Bragg High School, Antonia began working with Noyo Food Forest the summer after her sophomore year. She reported in an interview that when she started she didn't know what to expect, it definitely didn't occur to her how it would boost her love of cooking.

Antonia is quick-witted, opinionated, and a dedicated gardener. Her spunk keeps the rest of the interns and the Food Forest staff on their toes. She loves to bring garden produce home to cook for her family. She especially likes garlic, flat-leaf parsley, and tomatoes—the beginnings of many delicious Italian meals. Antonia has a unique approach to life. She makes her own clothes and dresses with style; often paying homage to decades past. She is sometimes seen working in the garden in a long skirt, pearl earrings, and red lipstick, none of which hold her back from working just as hard—if not harder—than everyone else in the garden. She usually leaves at the end of the workday with soil streaks on her face, dirt under her fingernails, and her backpack heavy with veggies from the garden. At Farmers Market, she engages with other local vendors and customers and talks about the produce and how she prepares it with traditional Italian recipes.

Antonia signed up to repeat the program four times. In an interview, she was asked why?

She said she loves the garden; she loves the produce; she especially loves cooking the produce. The Farmers Market is great fun. But none of those are the reason. “I feel like I’m helping,” she said. “I can see things grow and change. I can see how much my work makes a difference in the garden.”

* * *

Ellie's Family

Justin at the Farmers Market

When Ellie first told her daughter Nattie about the Food Forest internship at The Learning Garden, neither of them had high expectations. Nattie was finishing high school and had not found a summer job before starting community college. The stipend sounded good, and Nattie loved the culinary class she had just completed so the garden connection was a natural for her.

Today Ellie says a life-changing experience resulted. Not just for Nattie, but for the entire family of four.

Both Nattie and her autistic younger brother Justin eventually participated in the intern program. The results: the entire family's eating habits changed—and what a big deal that is in the life of any family.

But in this family, an even bigger deal is that Justin opened up to capabilities and opportunities no one ever expected.

The intern program teaches growing, harvesting, and selling produce. Nattie is a natural chef and she quickly and singlehandedly incorporated cooking all kinds of fresh produce, some items new to her and her fellow interns. Fava beans? Mizuna? She cooked at the garden for fellow interns, and she cooked at home for her family.

Her family definitely noticed, and Ellie responded to Nattie's enthusiasm by volunteering at the Food Forest. And when she did she brought along Justin.

At first Justin was very withdrawn at the garden as was his normal. But he was obviously enjoying the natural garden environment. Then he became interested in the veggies Nattie was growing, and harvesting, and taking home to cook. He soon began volunteering when he was at the garden with his mother. He especially liked harvesting, because they could take more produce home for Nattie to cook.

At 15 Justin was beginning high school with poor communication abilities, few other skills, and no self-confidence. He became comfortable in the garden because of regular visits with Ellie. And soon he asked to become an intern, like his sister.

Attending the program was a major accomplishment for Justin. His mother was often nearby to reassure him, but he was regularly challenged with new information and new activities to master. He recognized his own progress, saying of a favorite bloom, "I am flowering too."

The Farmers Market was a challenge because Justin didn't like talking to strangers; sometimes he didn't like talking at all. There he took a back seat, keeping things orderly, but not interacting with customers.

At the end of Justin's four-week grant-supported summer session, caring donors sponsored him as a special needs student for the 12-week afterschool session. He continued mastering garden skills. With his sister no longer working at the garden, he began taking home produce himself. He began cooking at home. But the Farmers Market persisted as a challenge. Justin remained the silent, helpful one. He went every week but wasn't engaged.

Until one afternoon a customer asked another intern "Are these purple beans going to turn green when I cook them?" When the intern answered "I don't know," Justin suddenly proclaimed from the back of the booth where he sat, "Yes! Yes, they will." And then Justin talked with the customer about cooking the beans.

As he said later "I knew the answer, so I had to tell him." Even though, like many cooks, Justin finds the answer disappointing.

Justin was amazed he could interact with customers. Over time, he developed relationships with regular customers. He took responsibility for set-up, and befriended other vendors who he knew by name. A whole new world of capability and interaction opened up for him.

Today many challenges remain for Justin but he can consider a future no one would have imagined for him.

Dinner hour at home has changed too. In the past, the path from freezer to microwave was well worn. Today direct paths run from the Farmers Market and the garden, where Ellie and Justin still volunteer, to their kitchen. And Ellie, Nattie, Justin, and Dad all take turns cooking fresh and wholesome dinners for the family.

A year later: Ellie's story was originally written in mid-2016 after Justin finished his second internship at the garden. A year later we checked in with Ellie who reported:

Most of what [the kids] think is in that story. Nattie last night said she liked the experience because she learned to cook healthier. She has become confident in the kitchen and cooks more for her brother, and has taken on cooking for the family more. [The program] also encouraged her to seek out Farmers Market for fresher fruit and vegetables. Justin likes making people smile, and he enjoys making a combination of items for other people. He has made Pesto with fresh basil from the garden. He also made his famous Fava Bean soup for everyone at the garden at the time he was there. I think the most important thing is that with his autism he has conquered many obstacles, and has been successful. He accomplished two sessions at the Noyo Food Forest and that is way more than I thought he would do.

* * *

Noah's Story

Noah (c.) at the Farmers Market

Noah moved to Fort Bragg at the beginning of high school and is homeschooled. The Food Forest internship has played an important role in his educational experience—and his social life. Through the program, he has met other people his age in Fort Bragg, engaged with his community at Farmers Markets, and learned agriculture skills that he will be able to directly apply to his future. In two years, he and his family plan to start a farm. During the summer, Noah particularly enjoyed harvesting Bachelor's Buttons for the bouquets interns make for market. He saved seeds from a few of the colors he liked and plans on growing the flowers on his family farm. Noah has a large family who appreciate the veggies he brings home—especially kale and cucumbers. When he isn't at the garden, he is playing and designing computer games, or studying with his brothers and sisters under guidance from their mother. He regularly arrives at the garden early, eager to help with whatever task needs to be done. The program gave him a chance to develop his gardening skills and practice growing for market, something he hopes to continue doing once his family has started their farm.

* * *

A Final Note

Noyo Food Forest is fortunate to have the support of an exceptional community and school district.

The California Farm to School Network has recognized the Fort Bragg Unified School District for its excellence in garden-based education and Farm to School food service.

The Food Services Director procures local fish, bread, and vegetables for the cafeterias on a regular basis. The Learning Garden at the High School and the Grow the Good Garden at the Middle School supply the cafeterias with fresh produce. There are thriving culinary arts programs at both the middle school and the high school. An agriculture program at the high school includes agricultural biology, agricultural chemistry, and agriculture mechanics.

Every school in the district has a garden. Every student in the district receives regular garden education starting in kindergarten, and the benefits are clear. Students love to be outside, to work with their hands, and to have opportunities to directly see—and taste—the benefits of their work.

It has taken time, dedication, and hard work for our community to get where we are. The school gardens were the catalyst for all this. That and some dedicated people, who created the exceptional food community, which made Noyo Food Forest possible. And which supports our continuing intern programs.

Your garden is your opportunity. We hope you will find inspiration here to create similar programs and/or support existing programs across the state and country.

Resources

California Farm to School Network. http://www.cafarmtoschool.org/

Center for Agroecology & Sustainable Food Systems. https://casfs.ucsc.edu/

Chess, Harvey, *Functional and Funded*
https://www.amazon.com/Harvey-Chess/e/B00JG7OTO6

Edible Schoolyard. http://edibleschoolyard.org/

Harvest of the Month.
http://harvestofthemonth.cdph.ca.gov/Pages/default.aspx

Life Lab Lesson Planning Search Engine.
https://fms11.oditech.com/fmi/iwp/cgi?-db=Life%20Lab%20Standards%20Database&-loadframes

* this data base cross references garden-based lesson plans with Common Core Math & Language Arts Standards and Next Generation Science Standards

Life Lab. http://www.lifelab.org/.

Occidental Arts & Ecology Center. https://oaec.org/

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