

Aquaponics in the School Peace Garden: A multi-faceted approach to youth engagement and social/environmental activism

Miki K. Tomita

University Laboratory School Public Charter School
ULS Project Pono Advisor

Jared Kawatani & Samantha Fata , Student Representatives

Betty Skiles, Teacher Representative

A presentation for the *Aquaponics in the Classroom* Conference

October 13, 2012

Kāneʻohe, Koʻolaupoko, Oʻahu, Hawaiʻi

Overview

- ULS Context
- History of Aquaponics at ULS (with Project Pono)
 - Systems Built
 - Food Grown
- Projects/Initiatives grounded in Aquaponics:
 - Class focus on Food Sovereignty
 - Student-Run “Food & Family Days”
 - CTAHR guest speakers and contacts
 - Service-Learning and Outreach
 - School Peace Garden
 - Studies of ahupua‘a, kalo, and loko i‘a kalo

Existing opportunities for social/environmental activism in the existing structure of the school

Limited:

- Demonstration of Prescribed Curriculum
- Highly academic, highly disciplinary courses of study
- No existing courses with primary focus on Sustainability, Food and/or Agriculture

Leeway:

- Administration is supportive of interdisciplinary or innovative practices, as long as it stays within the confines of the Prescribed Curriculum – e.g. Omnivore's Dilemma Study in Science and English classes
- Teachers should be experts in their disciplines, integrate disciplinary knowledge and practices into courses
 - The lens of Biosystems Engineering can potentially bring issues related to waste management, clean energy, and agricultural technologies into any disciplinary science classes
- Elective courses can be proposed for inclusion



UNIVERSITY LABORATORY SCHOOL

PROJECT PONO

- Goal 1: Provide opportunities for students to learn about and engage in practices that promote environmental awareness and cultural and environmental sustainability
- Goal 2: Promote self-awareness, self-efficacy, and self-determination in students to promote local and global citizenship
- Goal 3: Facilitate students in teaching themselves and their peers and community members about these topics.
- Goal 4: Promote empowerment and deep activism in youth, to create lasting change for Hawai'i and beyond.

Food Sovereignty Conference

- ‘Āina Ho‘ōla o Mā‘ilikūkahi (Hands Turned to the Soil) – annual conference on O‘ahu to engage youth in issues related to Food Sovereignty
- Food Sovereignty
 - the right to safe, nutritious, culturally appropriate food, food-producing resources, and the ability to sustain themselves and their societies
- Food Knowledge – Food IS political
 - where is it from, who made it and how
 - what resources did it take to make it
 - local cost? global cost? opportunity cost?
- Environmental and social justice issue
 - food growing and consumption practices affect our environment, typically tied to economics
 - good, nutritious, culturally-important food is a basic human right



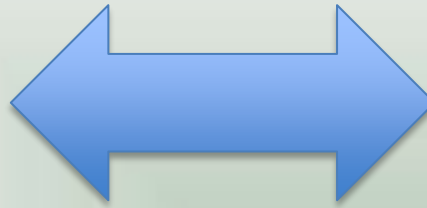


“WAIMANALO PROTOTYPE”

Tank + pump
4 26-gal growbeds
4 small tables
Cost: ~\$750
September 2010

“MANOA 2.0”

watershed design project
all but Bed #1 (top) gravity-fed
Additional purchase: tiles (~\$80)
April 2012



“DONATION STATION”

Tank + 950 pump
2 90-gal growbeds
November 2010
Estimated cost: ~\$1000
Added 3 26-gal growbeds
1 large table
Cost: ~\$350



What have we done?

- Work with UH CTAHR
- Discuss food habits and politics
- Study water quality chemistry
- Learn about natural pesticides
- Build aquaponics systems
- Harvest, cook, EAT
- Outreach to other youth



What have we grown?

- | | |
|--------------|-----------|
| Radish | Kalo |
| Peppers | 'Uala |
| Squash | 'Awa |
| Corn | Pohuehue |
| Soybeans | Akulikuli |
| Beets | 'Ihi |
| Mint | Popolo |
| Basil | 'Olena |
| Tomato | Tilapia |
| Leafy Greens | |
| Watercress | |



AQUAPONICS

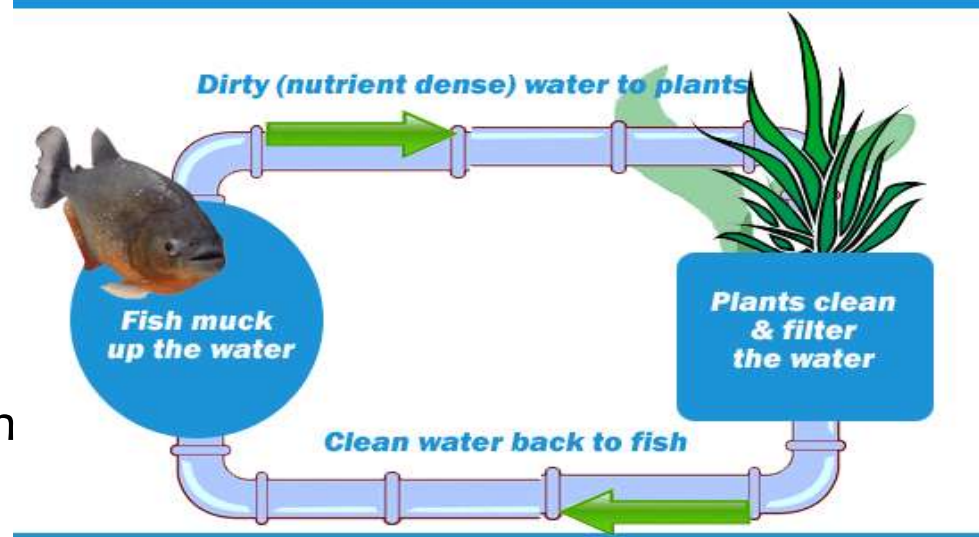
an example of a sustainable gardening system



aquaculture
+hydroponics
aquaponics



- uses significantly less water, space
- raise produce and fish to eat
- analogy to loko i'a kalo, ahupua'a
- students learn to build entire system
- students learn to harvest all parts
- donations go to GIFT and IHS
- outdoor activity center for youth at foster group home in Wai'anae



ULS Peace Garden

- Part of the International School Peace Garden network
 - Founded by Dame Julia Morton-Marr, 1/1000 Women of Peace nominated for the 2005 Nobel Peace Prize
 - educated 3,500 schools in 34 countries on aspects of peace, justice and environment so far
- Hawaii School Peace Gardens Network, project of Phi Delta Kappa Hawai'i
 - 15-20 HSPG schools in Hawai'i
 - Peace Gardens can be as simple as one friendship bench or space for conflict resolution and one sacred tree or plant
 - At ULS, we are trying to connect two existing gardens with a Peace Path, and deepening the focus peace and sustainability in the Courtyard



*Nurturing Global Peace
Through Education*

INTERNATIONAL DAY OF PEACE ■ SEPTEMBER 21



**SUSTAINABLE
PEACE FOR A
SUSTAINABLE
FUTURE**

www.un.org/en/events/peaceday

Creating your school PEACE GARDEN



PDK Hawaii School Peace Garden Community
pdhawaii@gmail.com or alevine@hawaii.edu



INTERNATIONAL SCHOOL PEACE GARDENS "Next Steps" Checklist

Step 1: Register your involvement with the International Peace Gardens Program at www.ihtec.org. Click on the gold "Register" button. Follow the links and fill in the form (the form goes directly to IHTEC).

Step 2: Plan your Peace Garden. Minimally, your Garden will include 2 friendship benches and one peace or sacred tree, and a path of peace with peace signs, student sculptures, or some other way of recognizing it as a Peace Garden.

Student involvement in pre-planning. Students should be engaged throughout the process, from brainstorming to planting, through maintenance and continual development.

- Meet with Julia Morton-Marr (on-line or if possible, in-person) as a staff to discuss how to incorporate the Peace Garden as a curriculum and as a physical element in your school program.

Some ideas:

- Each child creates his/her idea of peace through: pictures, posters, dioramas that can be displayed around school on an on-going basis

Notes/Ideas: _____

- Incorporate peace values for the classroom as an integrated part of the daily routine in the classroom (e.g. *sharing* of space, materials, insights and ideas; *respect*; *harmony*; *discussion/conflict resolution*).

Notes/Ideas: _____

- Each class walk around the grounds to decide what location to select. Children each design a garden (incorporating math, science, art, etc). Each class proposes a single design to be considered as the school design.

Notes/Ideas: _____

- Brainstorm ideas with students, staff, parents, with respect to other sustainability ideas, such as solar energy, conservation of water, and transportation.

Notes/Ideas: _____

Physical components of Peace Garden.

- 2 benches designated as "friendship benches".

Notes about material, placement, art, etc: _____

- Plants to support local, migrating, or native species

Food & Family Day

February 26 2012

10:30 am – 2:45 pm

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Our event is about bringing families together to learn about all aspects of food - how to grow it, how to prepare it, how to enjoy it together; and the environmental and economic impacts of our food choices and consumption habits.

University Laboratory School
Multi-purpose Building
1776 University Ave. UHS #3-121
Honolulu, HI 96822



We will be showing Ingredients Hawaii, which

illustrates Oahu's emerging local food community as an alternative to imported and processed foods. The film tells the story of the ways in which the people of Hawaii are reclaiming their agriculture and local food traditions in light of an uncertain food future.



Thank You to our Partner



UHS Food & Family Days

‘Ohana, ‘Aina, Kuleana

- Inspired by 7th graders' struggle to engage their families in better food practices
- Focuses on inviting families to eat together, learn about/discuss issues related to food, demonstrate home gardening techniques, and show “food for thought” films
- Most food is prepared by students, with ingredients harvested, donated, or purchased from local farmers and businesses
- Guest speakers included macrobiotic chef, local farmer, avid home gardener, vegan athlete, aquaponics researcher, etc.

Bronson Chang, Co-Founder & Partner of Uncle Clay's House of Pure Aloha is an inspired social entrepreneur passionate about creative and innovative entrepreneurial approaches to bring greater happiness, prosperity, and freedom to others. After four years of collaboration, Bronson and his uncle launched Uncle Clay's House of Pure Aloha in 2011. HOPA is a Hawaiian treat shop and social spreading homemade local shave ice at a time

President of Nalo Farms, Inc. is a better and more sustainable way living. Nalo Farms grows their own produce, such as Kamuela, Maui, and Hawaii. They also distribute products such as Kamuela, Maui, and Hawaii. They also distribute products such as Kamuela, Maui, and Hawaii. They also distribute products such as Kamuela, Maui, and Hawaii.

- Vegetable Planting
- Locally sourced Lunch
- Ch...
- Movie & Games

Other applications of our Aquaponic Systems

- Prepare ho‘okupu for Kanaloa-Kaho‘olawe
- Engage students in Google Apps for Education in different ways
 - Schematic drawings of systems in planning periods
 - Share documents for tracking nutrient levels and plant growth
- Engage foster youth in group home in “virtual” partner system
- Conference presentation and outreach
 - Schools of the Future Conference (Grow Hawai‘i)
 - UH CRDG Summer Science Program
 - TEDx Talk
 - Hawai‘i Green Schools Conference
 - Jr. Young Buddhist Association Conference
 - Statewide Farm to School Conference
 - Hawai‘i Environmental Education Symposium
 - Ho‘ala School Service Learning Camp
 - Video Projects for school website and other uses

lau or lū'au
(leaf)

'ao lū'au or mahola
(unexpanded, rolled leaf blade)

mahae
(leaf sinus)

a'a lau
(midrib and veins)

piko
(junction of



For more information:

Uls Project Pono

1776 University Avenue #3-121

Honolulu, Hawaii 96822

project_pono@universitylaboratoryschool.org

miki_tomita@universitylaboratoryschool.org

Advisor: Dr. Miki K. Tomita

School Website: www.universitylaboratoryschool.org

Phone number: 808-956-7833

Fax: 808-956-7260