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 iʻa 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
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 grown?
- Radish
- Peppers
- Squash
- Corn
- Soybeans
- Beets
- Mint
- Basil
- Tomato
- Leafy Greens
- Watercress
- Kalo
- ‘Uala
- ‘Awa
- Pohuehue
- Akulikuli
- ‘Ihi
- Popolo
- ‘Olena
- Tilapia

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
AQUAPONONICS
an example of a sustainable gardening system

- uses significantly less water, space
- raise produce and fish to eat
- analogy to loko ‘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
Creating your school PEACE GARDEN
ULS 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.
Other applications of our Aquaponic Systems

- Prepare hoʻokupu for Kanaloa-Kahoʻolawe
- 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 Hawaiʻi)
  - UH CRDG Summer Science Program
  - TEDx Talk
  - Hawaiʻi Green Schools Conference
  - Jr. Young Buddhist Association Conference
  - Statewide Farm to School Conference
  - Hawaiʻi Environmental Education Symposium
  - Hoʻala School Service Learning Camp
  - Video Projects for school website and other uses
Creating your school PEACE GARDEN

- **lau or lūʻau** (leaf)
- **ʻao lūʻau or mahola** (unexpanded, rolled leaf blade)
- **mahae** (leaf sinus)
- **aʻa 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