

Mid-Pacific Institute Aquaponics

GREGG KANEKO
HIGH SCHOOL TEACHER

Aquaponics @ Mid-Pacific

- Science elective course
- Semester long
- Mostly seniors
- “Blended Course”
 - 50% face to face time
 - 50% independent online coursework
- Course Theme: SUSTAINABILITY in HAWAII!

Why Choose Aquaponics?

- Learn through “DOING”
- Takes the “Next Step”
- Multi-disciplinary
- Relevant
- Current events
- “Higher purpose”- solutions to some problems?
- Lifestyle: backyard system
- Selfish purposes!



“Multi-Disciplinary”

- Biology

- Systems
- Plant biology
- Plant nutrition
- Nitrogen cycle

- Chemistry

- Nitrogen cycle
- Importance of pH

- Economics/Marketing
 - Properly market produce

- Physics
 - Light
 - Water flow

- Mathematics

We're (Hawaii) pretty screwed...

Are we living
sustainable lifestyles?

What unique issues
does Hawaii face?

How can aquaponics
be a part of the
solution?



A dark brown wood grain background with a prominent vertical grain pattern and several knots. The text is overlaid on the left side of the image.

WE NEED TO LIVE MORE SUSTAINABLE
LIVES.

Our Systems

-Completely student designed
And built



gallon pond
gallon gravel bed
gallon raft bed/sump



In anything, students make good gravel washers



Pictures/Successes

- Students are amazing, they take the class places I never imagined.
- MOTIVATION is so important. If students believe in what they are learning, they will work hard.
- In aquaponics, motivation comes naturally









Projects.



What would the collective impact be if every single family home had a small aquaponics system?

- 239,626 homes
- 15 heads of lettuce a month
- = *2,246,493 lbs of lettuce per month*
- Fuel saved from local production
- *Equivalent to 252,087 gallons of gas per year*

Challenges...

"If you aren't in over your head, how do you know how tall you are?"

T.S. Eliot



\$\$\$\$Funding\$\$\$\$

- Aquaponics needs initial capital
 - Sometimes harder to find donors as a private school
 - I had to beg and plead.
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- Note: a lot of people in the aquaponics community have been extremely helpful and generous. I am amazed how wonderful people can be.

Vacations!!!

- Shutting systems down is NOT ideal
 - Might take a YEAR for systems to fully mature and reach peak productivity
- Have a plan!
- Might be a deal breaker...



Bugs...

- Hopefully you won't get any...
- Very difficult to control and we have struggled with it
- Right now tiny slugs have invaded our growbeds



Consistency is KEY

- It is so very important to maintain consistent conditions
 - Maintain pH
 - Supplement iron/potassium/calcium
 - Feed fish as much as possible, try not to let nitrates drop
 - WORMS
- Poor consistency can lead to problems
 - Poor growth
 - BUGS are opportunistic

Maximize feeding/High fish of density

- The more filtration the better.
- Allows for high fish densities and heavy feeding.
- Higher concentration of nutrients

Let kids try everything

- Don't let your personal opinions prevent kids from trying things
- Kids are going to have crazy ideas, let them try
- I promise you, you'll learn something new

losing thought:

Mr K, I gotta thank you. Before our aquaponic system, my family rarely spent any time together. Now we spend a lot of time working on it as a family.”