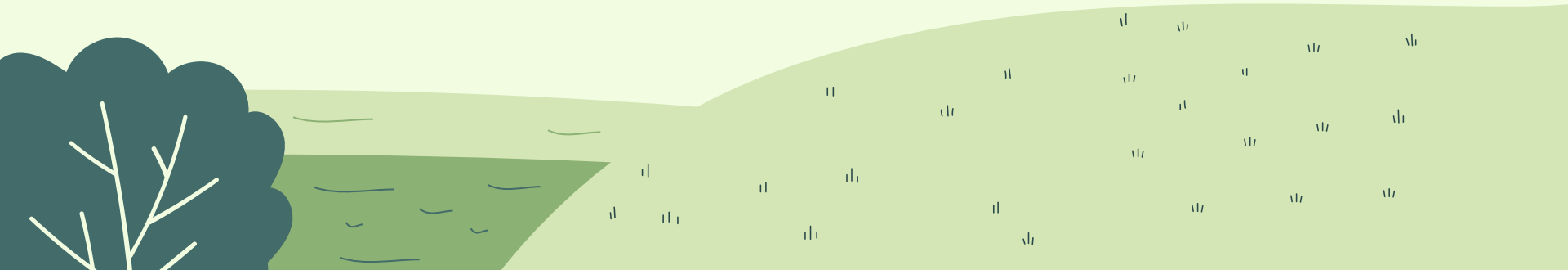
AEROPONICS AND CAREER EDUCATION

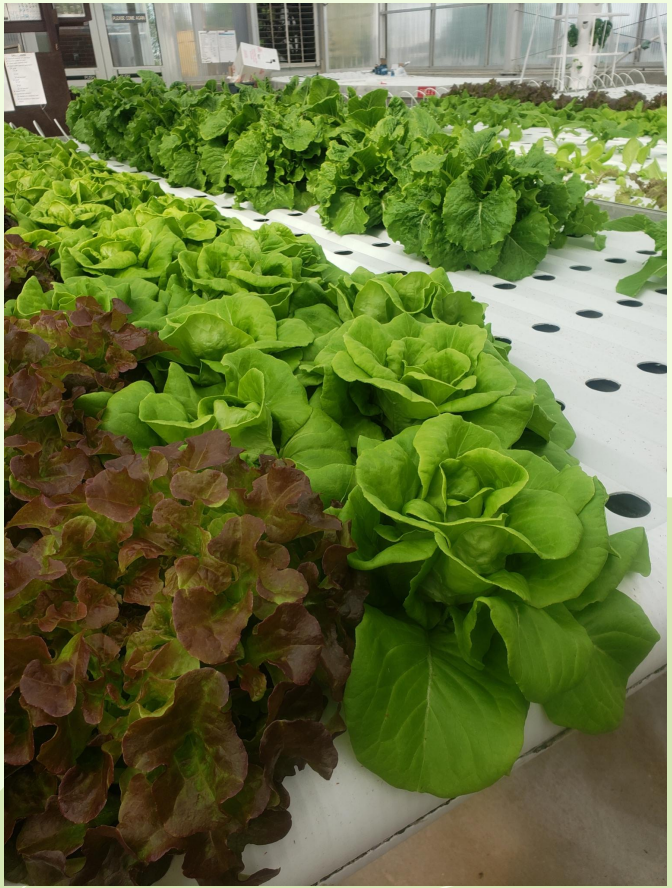


TODAY:

- Introductions and Grant details
- Hydroponics, Growing, Farm to School
- Greenhouse and supplies
- Curriculum and Resources
- Brainstorm Grow Plans
- Set some dates!

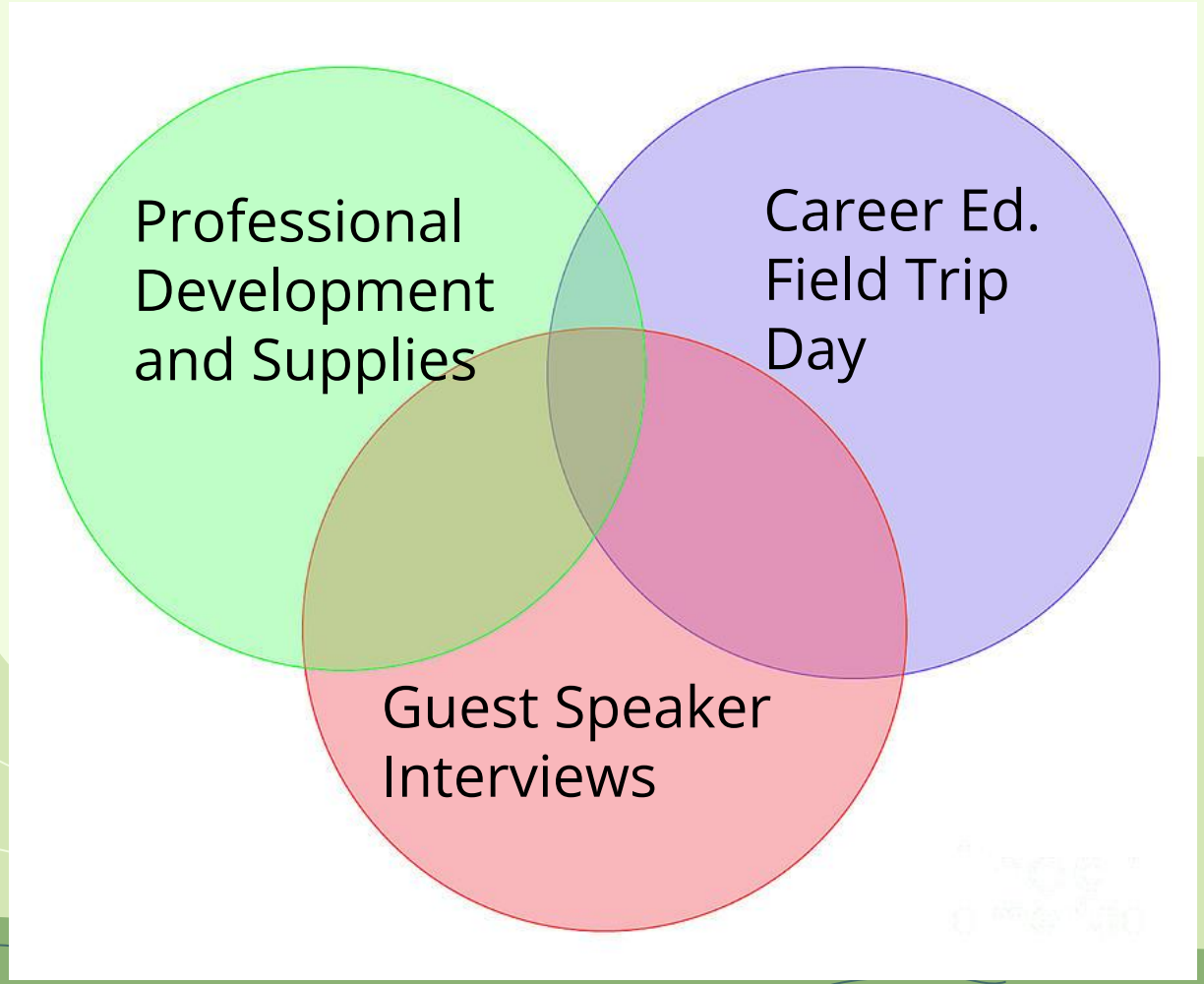
WELCOME!

- Name
- School
- Grade Level(s)
- Any current garden programming?




SARE
Sustainable Agriculture
Research & Education
www.sare.org

3 parts to meeting the goals outlined within our grant:



Part 1:
Professional Development and Supplies

- Grow Tub Winners
  - Take Home supplies today
- Grow Tower Winners
  - You can take supplies home today, or I can bring it to your school and set it up at a later date
- We are providing you with plants for a quick start

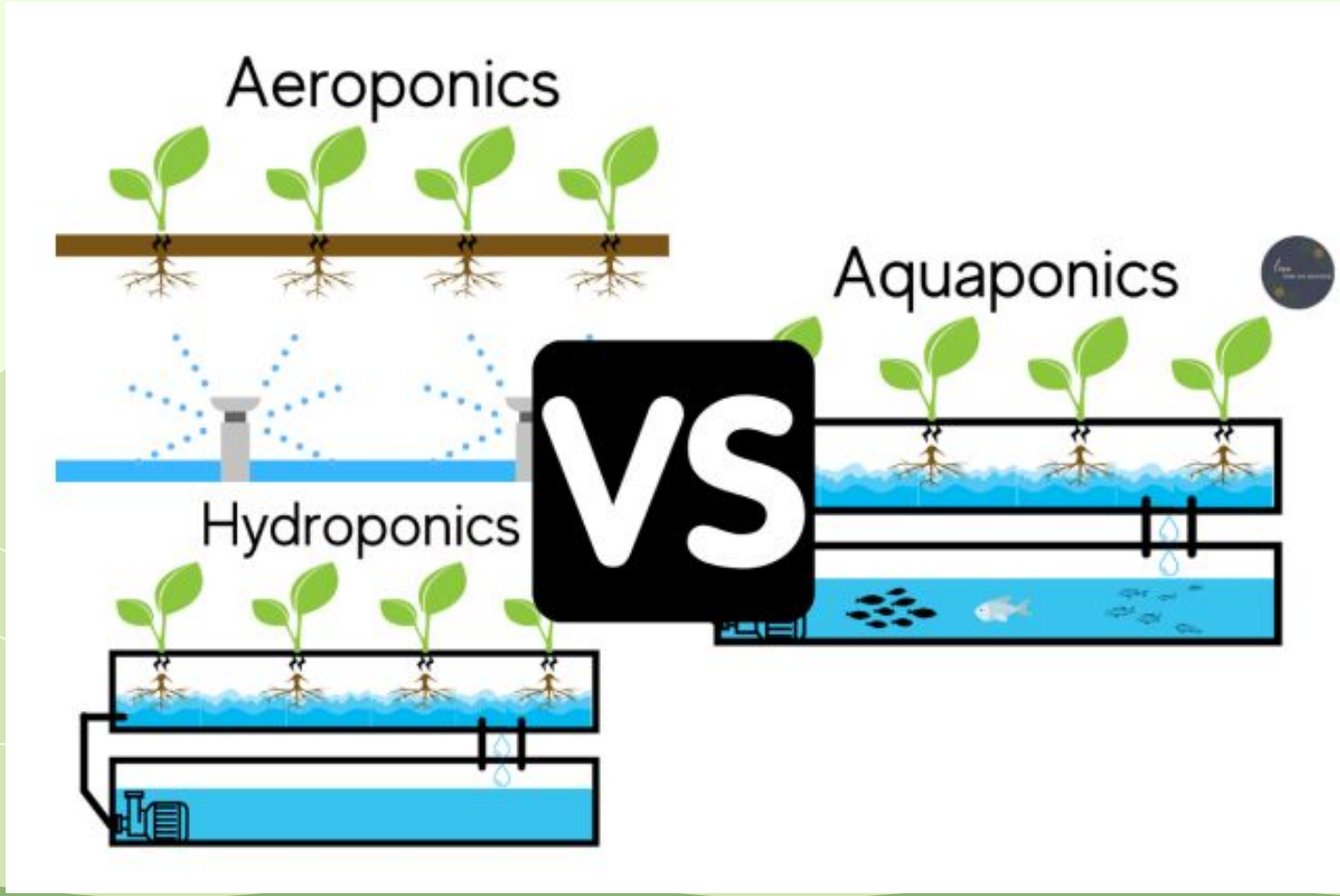
Part 2:
Career Ed. Field Trip Day

- 12 students per school
- 3 dates (fall or spring?)
- 4 schools per date
- 9:00 A.M- 2:00 P.M
- 4 sessions/ day

Part 3:
Guest Speaker Interviews

- VIRTUAL ZOOMS
- 2, 30-45 Minute Sessions
- Students will need to have some questions prepared to ask
- Guest speakers include
  - Beachner Grain
  - Local restaurant owner and manager

LET'S GET STARTED


Aeroponics
Aquaponics
VS
Hydroponics

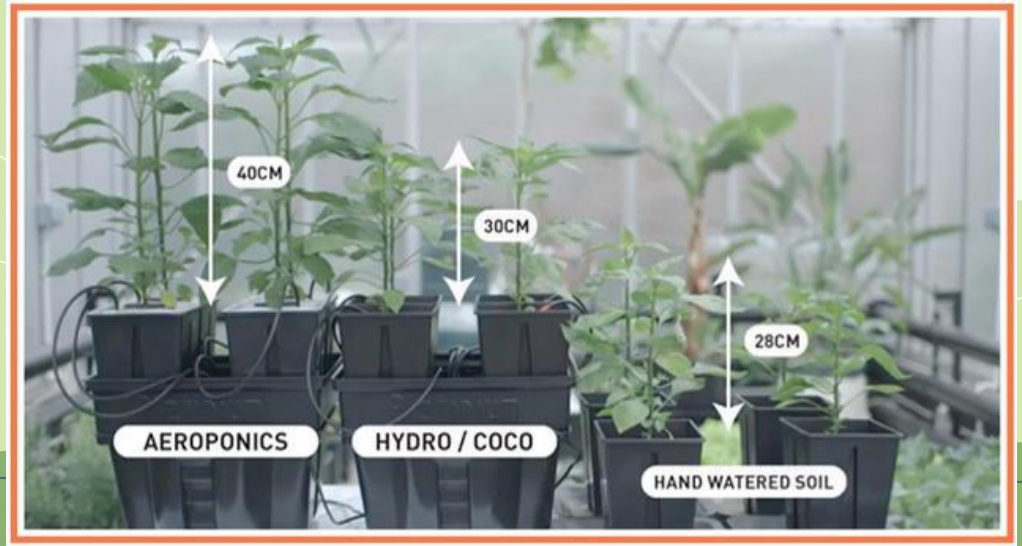
AEROPONICS VS. SOIL

PROS

- Increase yields by as much as 30%
- Triple the speed of plant growth
- Uses around 10% of the water and space

CONS

- Initial setup can be expensive
- Very susceptible to power outages and system failures
- Requires more supervision and maintenance



WHY IS THIS IMPORTANT?

8 Billion People

WHAT CAN WE GROW?

Best

Green Vegs (Lettuces, Spinaches, Kales)

Herbs (Basil, Mint, Chives)

Strawberries

Tomatoes

Scallions

Cucumbers

Green/Sweet Peppers

Radishes

Beans

Harder

Deep Root Crops

Carrots

Potatoes

Kohlrabies, turnips

Space Craving Plants

Pumpkins

Corns

Zucchinis

WHAT CAN WE DO WITH OUR PRODUCE?

1. Use in school lunch program or class
2. Sell to local stores or restaurants
3. Donate

DO I NEED A LICENSE?

NO

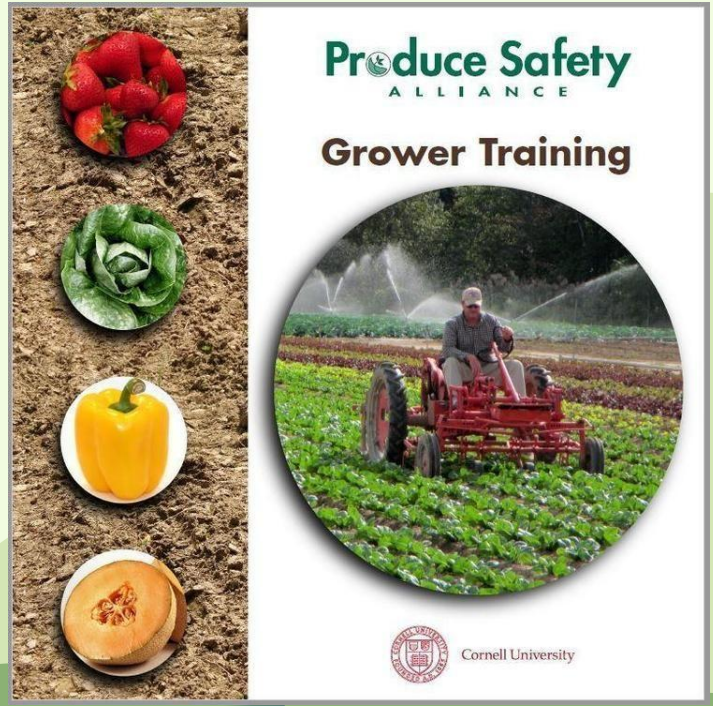
A food safety license is not required for growers who sell their fresh, uncut produce directly to end consumer or to Food Processing Plants or Food Establishments. However, a Food Processing Plant license is required if the operation aggregates produce from different producers or cuts or otherwise processes produce, including cut leafy greens.

RECOMMENDED (AND SOON TO BE REQUIRED?)

- FSMA Producers Safety Course
  - Contact your local extension office or department of Agriculture

https://www.ksre.k-state.edu/foodsafety/produce/fsma/index.html

K-STATE Research and Extension



GOOD AGRICULTURAL PRACTICES (GAP)

KDA (Kansas Dept. of Ag) recommends that all growers review information about the Good Agricultural Practices (GAPs).

- https://www.ksre.k-state.edu/foodsafety/produce/fsma/index.html
-
- https://www.ksre.k-state.edu/foodsafety/produce/fsma/docs/Coverage.pdf

RECORDS FOR YOUR GREENHOUSE/ GARDEN

*Farm Food Safety Plan

*Training Log

*Traceability Log

*Invoices

Pest management log (great activity or job for students)

Greenhouse Sanitation & Inspection Log

Produce Transportation Log

Vehicle Inspection Log

DONATING PRODUCE

Who does the Kansas law protect?

The Kansas law protects both “good faith donor[s]” and the organizations that receive and distribute donated food (“donee[s]”)

The Kansas law covers both foods that have a long shelf life (“canned”)[15] and foods that are only edible for a short time (“perishable”).

GREENHOUSE TIME

STUDENT OPPORTUNITIES

HORTICULTURE & AGRICULTURE

- Providing students with basic horticultural knowledge and specialized sustainable growing skills

SUSTAINABILITY

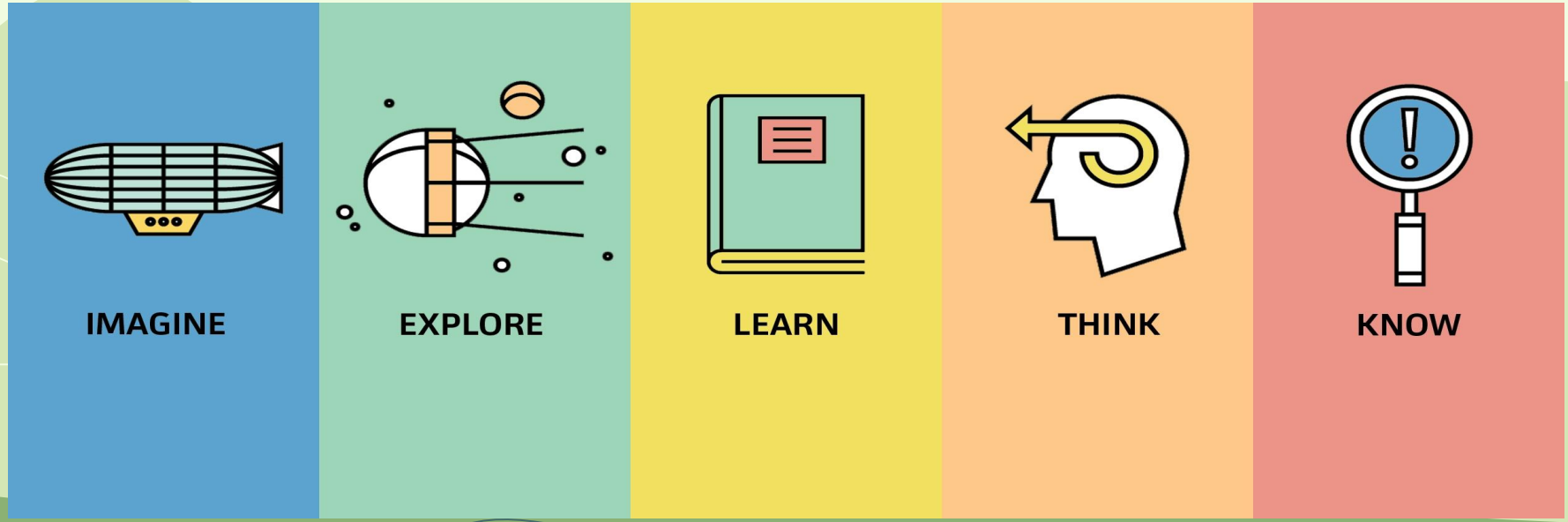
- By using a system that is space efficient and water efficient, and produces year around, we can teach students about sustainability, global health and environmental issues such as soil degradation, food insecurity and food waste, water conservation, etc.

HEALTH & NUTRITION

- When students grow their own produce, not only does it encourage them to eat new and healthier things, but also has the opportunity to provide the rest of the school with fresh produce through the lunch program.

PROJECT BASED LEARNING

- PBL opportunity to allow students to research, design, engineer, and implement a successful program over their own



SCIENCE

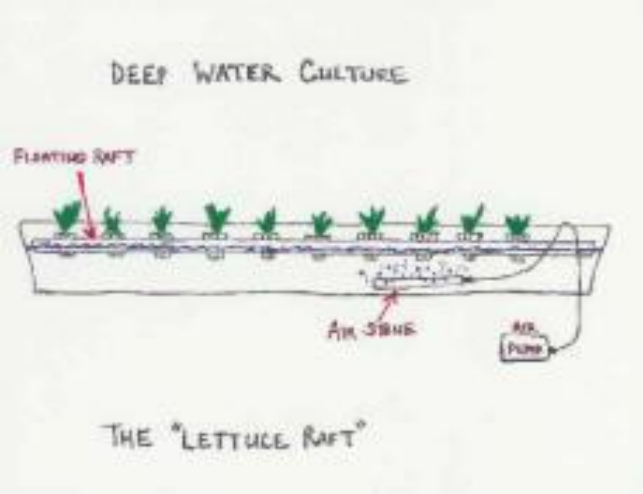
- Photosynthesis
- Needs of living things
- Water quality/ conservation
- Sustainability
- Labs/ projects
  - Adjust pH and compare effects
  - Use different colored bulbs, document effects
  - Adjust watering schedule

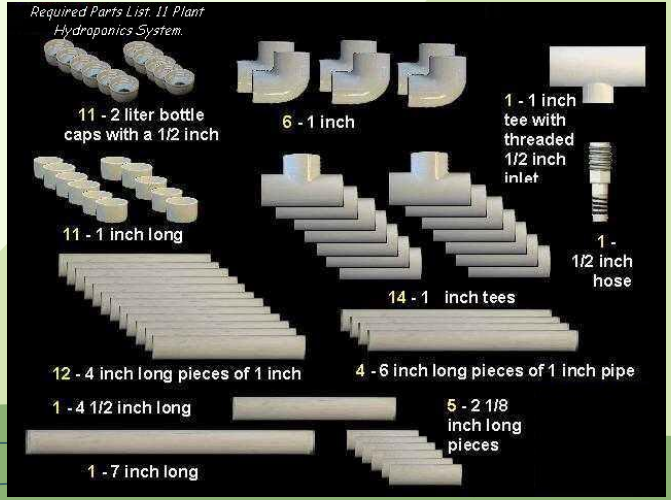
TECHNOLOGY/ COMPUTERS

- Programming systems, automation
- Documentation
- Spreadsheets/ excel
  - Inventory
  - Traceability
  - Channel Tracking
    - Microsoft word, google docs
    - Powerpoint
  - Business presentation, sales

ENGINEERING

- Design your own system
- Explain how the system functions
  - Example: Vertical garden
  - Create a materials list with in a budget for the system





MATH

- Profit and loss
- Business projections
- Expenses
- Seeding, germination, and harvest rates

FREE LESSONS PLANS

- https://kvogelsberg.towergarden.com/grow/lesson-plans
- https://www.ksagclassroom.org/kslesson/
- https://kidsgardening.org/resource-lesson-plans/
- https://nutrientsforlife.org/for-teachers/educator-resources/

RESOURCES

- https://kidsgardening.org
- https://www.ksagclassroom.org
- https://www.journey2050.com/educators/
- https://nutrientsforlife.org
- https://www.kansasgreenschools.org

GRANTS

- Budding Botanist
- Whole Kids Foundation
- Gro More Good Grassroots Grant
- Frontier Farm Credit
- Farm Bureau
- SARE Youth Educator
- Youth Garden Grant


COMMUNITY


PARTNER
SHIP


SUPPORT

3 CONSIDERATIONS:

- What am I growing?
- What am I doing with the produce?
- How am I incorporating that into my classroom and my school?

Bonus: What would I like to see from this project or in the future for our school?