



Building Youth-Empowered Food Systems

Three examples of unique student-led food systems in Nebraska
afterschool programs

Grow ELO: Food Systems + Afterschool

Isolated experiences within food systems subjects, while beneficial to quality programming, often lack pathways for skills development and systems understanding.

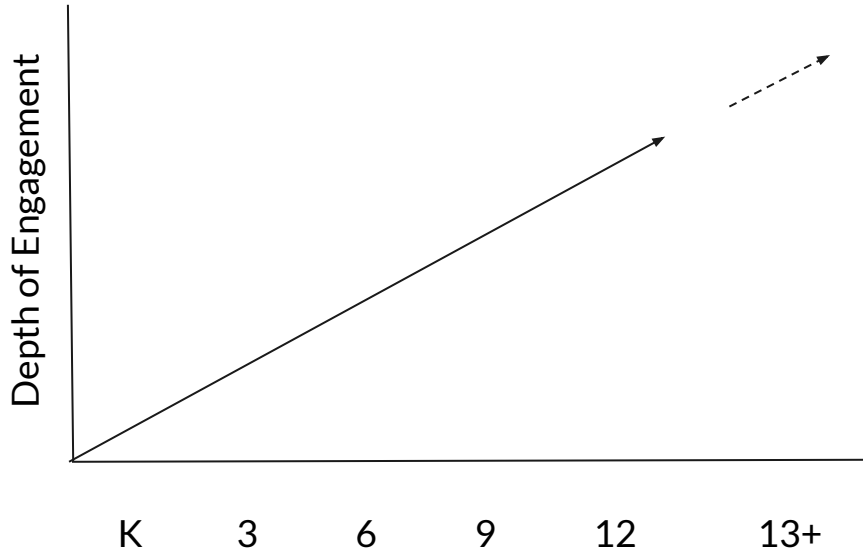
We have begun building an interconnected, scaffolded series of K-12 food systems expanded learning opportunities (ELOs) which will enable K-12 students to become active participants in their food systems. At present, we focus on providing:

- **Introductory activities in Elementary School**
 - Basic planting/gardening
- **Supportive activities in Middle School**
 - Assisting at school/community gardens
- **Innovative Activities in High School**
 - Student directed projects/connections





Connected Food Systems Engagement



- K-12+ continuum of environmental education at BSB
- All food systems programs connect natural sciences, student-agency, and connection to community
- As students get older, their engagement in opportunities can deepen


**Viking
Discovery
Program**

**Raised Bed
Gardening**





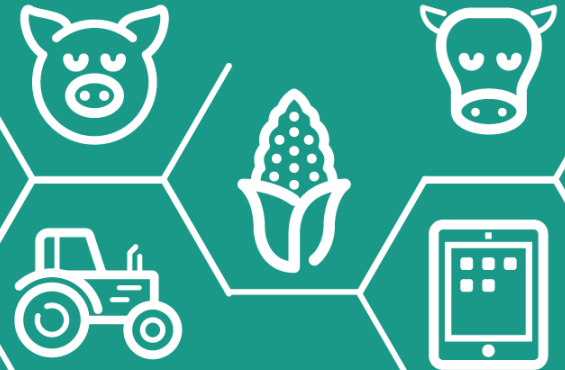
Let's Get Growing!

Grow Towers with Nebraska Agriculture in the Classroom
Courtney Shreve



NEBRASKA
**AGRICULTURE
IN THE CLASSROOM**

NEBRASKA FARM BUREAU FOUNDATION
www.nefbfoundation.org



Overview

3rd - 5th Grade Grow Towers

Goal: Grow enough lettuce for club to enjoy a salad party and then design a way to increase production to supplement a school lunch, farmer's market, or to enjoy with the sites families.

Piloting in 3 Sites - 5 Grow Towers Each (Tower Garden)

Broken Bow

Ashland-Greenwood

Beatrice

20 Lesson Plans- Connect to Core Learning

Daily Routine Care



Themes

Section One: How do we grow plants?

Plant needs (air, water, sunlight, nutrients, soil, space, location)

Transition: Increase in population - how will we grow more food with less land & resources?

Section Two: How do we grow more with what we have?

Food Scalability (genetics, gravity, water, pollination, pest and weed management, engineering)



H.S. Connections

Broken Bow

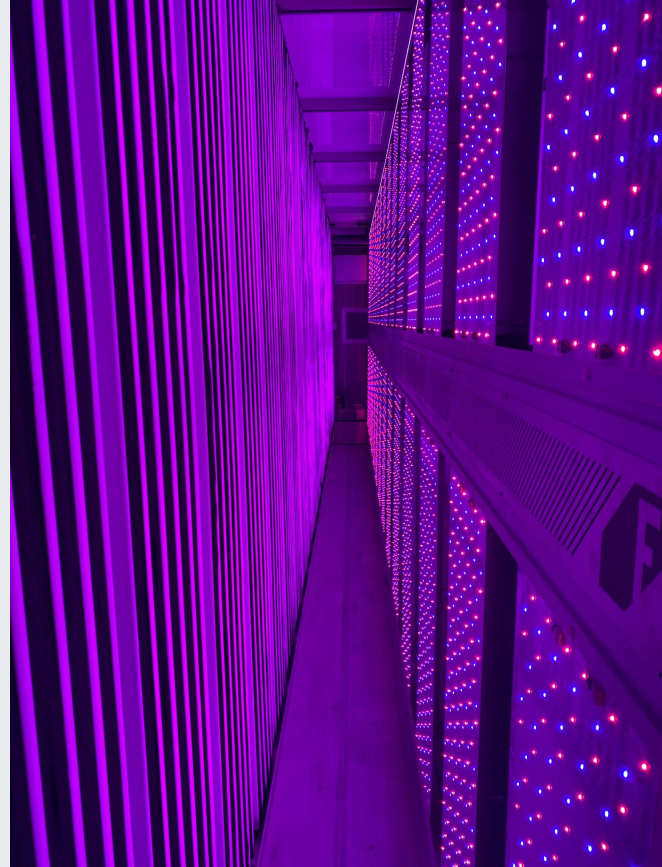
- H.S. Ag Ed Students are leading the clubs with K-2 and 3-5 groups
- Planning lessons, updating families, engaging in curriculum





Innovative Activities for HS Students

Hydroponics: The Freight Farm Greenery





The Greenery at the Bay

- The Greenery at the Bay is a shipping container turned hydroponic farm created by **Freight Farms**
- It is an innovative, more sustainable solution to many current agriculture practices that can be implemented in various environments, including urban areas
- The cultivation area within the farm utilizes vertical grow walls, drip emitters that dispense nutrient water to the plants, and LED light panels to create a high tech farm that uses 99% less water than traditional farming and produces up to 3 acres of nutrient dense food in a fraction of the space; year round
- The farm has a nursery station, capable of germinating and growing over 4,500 plants at a time
- Currently we grow a range of produce: lettuce, kale, swiss chard, radishes, cabbage, basil, and other experimental crops



Sustainability and Environmental Impact

- Because sustainability is one of our main focuses, the farm is working towards implementing solar panels to create a system that runs on renewable energy
- With low water usage and land use, the use of compostable plugs made from crude oil processing waste, composting our organic waste, in addition to the future solar energy use, the farm is on its way to becoming a sustainable and low impact project
- It is also contributing to the creation of farming systems that could potentially be carbon neutral in the future
- We believe it takes a combined approach to have local food security, specifically that innovations like the Greenery are necessary to provide food while current crop land is regenerated and sustainable agriculture practices are implemented



How can the Greenery connect to all grade levels?

- Many stages of and important information about plant life cycles can be seen and taught from the farm→ these teachings can be implemented in small lessons to students based on their age
- The farm is able to supply pods and seeds to do the “seed in cup” experiment with elementary students, showcasing a small piece of hydroponics at an early age
- Extra seedlings from the farm can be used in grow towers and gardens across schools as students get older
- Students from the Independence Academy also help with farm tasks and are able to gain valuable skills
- In highschool, students can intern at the farm as described in the following slides

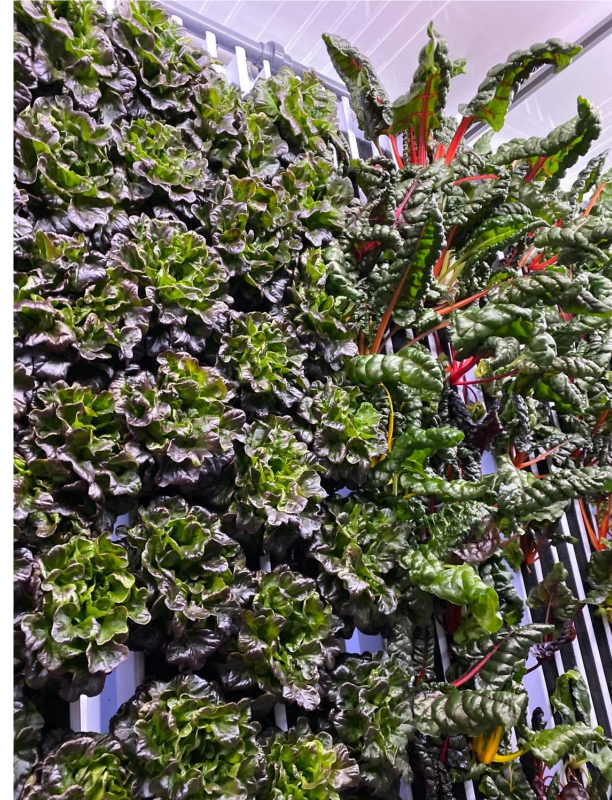


How can we engage the high school students?

- Providing opportunities for hands-on experiences with innovative agricultural technologies and meaningful connections between hydroponics and plant science
 - Can appeal to students interested in agriculture/plants and students interested in high tech machinery
- Exposure to different systems the farm utilizes
 - Nutrient dosing
 - pH and EC monitoring
 - Water maintenance
 - Electrical system
- Proper plant management in a hydroponic setting
 - Pruning
 - Disease management/health checks
 - Upkeep of optimal plant requirements
- Practice planning, business, and produce distribution techniques
 - Seeding, transplanting, harvesting and cleaning
 - Marketing
 - Collaborating with neighboring programs and buyer

How does this benefit the students?

- Developing skills through hands-on experiences
- Participating in activities that involve a variety of topics
- Learning about important relationships between different fields
- Finding inspiration to continue their education in a STEM field
- Finding inspiration to become involved in other activities related to agriculture
- Gaining experience to support their own career goals
- Building and supporting a strong community
- Developing team building and problem solving skills





How can we promote community involvement?

- Providing a setting to engage in community outreach
- Providing materials and resources to different populations in a community
 - Offering seedlings to promote the development and establishment of local food systems (community gardens)
 - Providing fresh produce year round to sell within the community (schools, farmers markets) or to donate to food banks
 - Having discussions and giving tours to teach about the farm, how it works, and what it can provide to the community
- Encouraging students and community leaders in the program to be involved in their own community
 - Extending their knowledge and experience to others



Panel Discussion

How do you connect your food systems programming with other afterschool & school day learning?



Panel Discussion

How do your programs connect to your communities?



Panel Discussion

Can you talk about how older youth engage in and lead your food systems programs?



Panel Discussion

Audience or Panelist questions encouraged!