

Unit Title: Attainable, Sustainable Food

Grade Level: 9-12

Subject Area: Science

Duration/Length/Number of class periods: 4 class periods ~ 2hr each.

Description: An introduction to methods employed to grow crops, past and future. Focus will be sustainability; economic, and natural resources.

Established Goals (National, State, Local):

S1.1 I can identify ways scientific development was influenced by society and how society has changed as a result of scientific study.

S1.2 I can analyze science arguments and explain strengthened evidence supporting a single explanation.

S1.3 I can design and carry out a scientific inquiry, based on the scientific method and match my hypothesis to my predicted outcomes and review data for bias and strength of evidence

S1.4 I can explain the process of reviewing scientific understandings when data is collected. I can identify if theories are supported by data or not, including when paradigm shifts have occurred in the scientific community at large. I can identify the elements of a system, including independent and dependent variables, and which parts are not considered part of a system.

What Enduring Understandings are desired?

Billions of people across the globe are facing food insecurity.

What Essential Questions will be considered?

Can we extend the growing season in regions limited by weather / seasons?

Can growing systems like hydroponics reduce the need for limited resources; tillable land, water, or favorable climate?

Students will know / be able to:

Set up a growing system, and compare the productivity and costs with other systems set up in the classroom

Analyze variables within their systems to maximize yield.

Description <i>Units must include at least one of each formative, summative, introductory activity and learning activity. Check the appropriate box; one per row.</i>	Fo rm ati ve	Su m ma tiv e	Intr odu ctor y Acti vity	Lea rnin g Acti vity	Stu den t Tec hno logy Use d	Teac her Tech nolo gy Used	ISTE Stan dard s
Week one of my seminar - Community building, and checking for understanding - Intros - Stand Where You Stand - Word Wall - Lay out the course - Syllabus, expectations for success. - Show you tube Global food crisis explained - Discussion - Visits, tours of partnership sites, and guest speakers - End of the week wrap - Group discussions for clarity - Kahoots designed by students. - Gives the team one more point to check not only understanding, but what the students took away from the week.	x		x	x	x	x	1,A,C
Tour - U of M, St Paul Ag. Greenhouses, aquaponics, fields, Bee Lab			x	x			1,B
- Brainstorming project ideas as a group, and doing 1:1 learning target audits - Pre research on focus area - Project tuning as small groups - Additional background info on growing systems - Bio-chem lesson on photosynthesis, and nutrients- inorganic salts/ ions				x	x	x	2 B,C
Intro to plant nutrients. Master Gardener program - U extension Students research nutrients, and water management in different systems. Present findings, and choice.		x	x	x	x	x	4,A,D
Check in as group	x			x			

• Tour and service learning, Veterans Farming Initiative, an organic / therapeutic farm providing produce for veteran's food shelves.							
• Presentations of projects with group feedback ◦ Individualized assessment focused on skills, and learning targets the student is working towards. • Wrap up and evaluations completed for both staff and students. • May include guest / industry experts as available • Uploading evidence onto Headrush, and portfolio		x	x	x	x	x	

Materials, tools and resources:

Projector, or screen for showing videos
Greenhouse
Willing university, and extension connections
Analytic tools for nutrients
Cameras
Google Suite

Unit Plan Author Chuck Hoppe Northwest Passage High School

Additional credit given to: