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FOOD SYSTEMS THINKER

Systems Thinking in the Context of Sustainable Food Systems

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INTRODUCTION

- Two major problems in the education systems:
  - Lack of higher-order thinking abilities.
  - Limited knowledge about food and food systems.
- Learning goal
  - Students make informed decisions in food choices and future careers related to the environment, economy, and community.
- Lack of systems thinking
  - Thinking in systems thinking way is not intuitive or innate.
  - Human evolution has favored mechanism to naturally deal with problems and to make decisions by breaking them down into parts.

(Hiller Connell et al., 2012; Valerdi & Rouse, 2010; Verschuren, 2001)

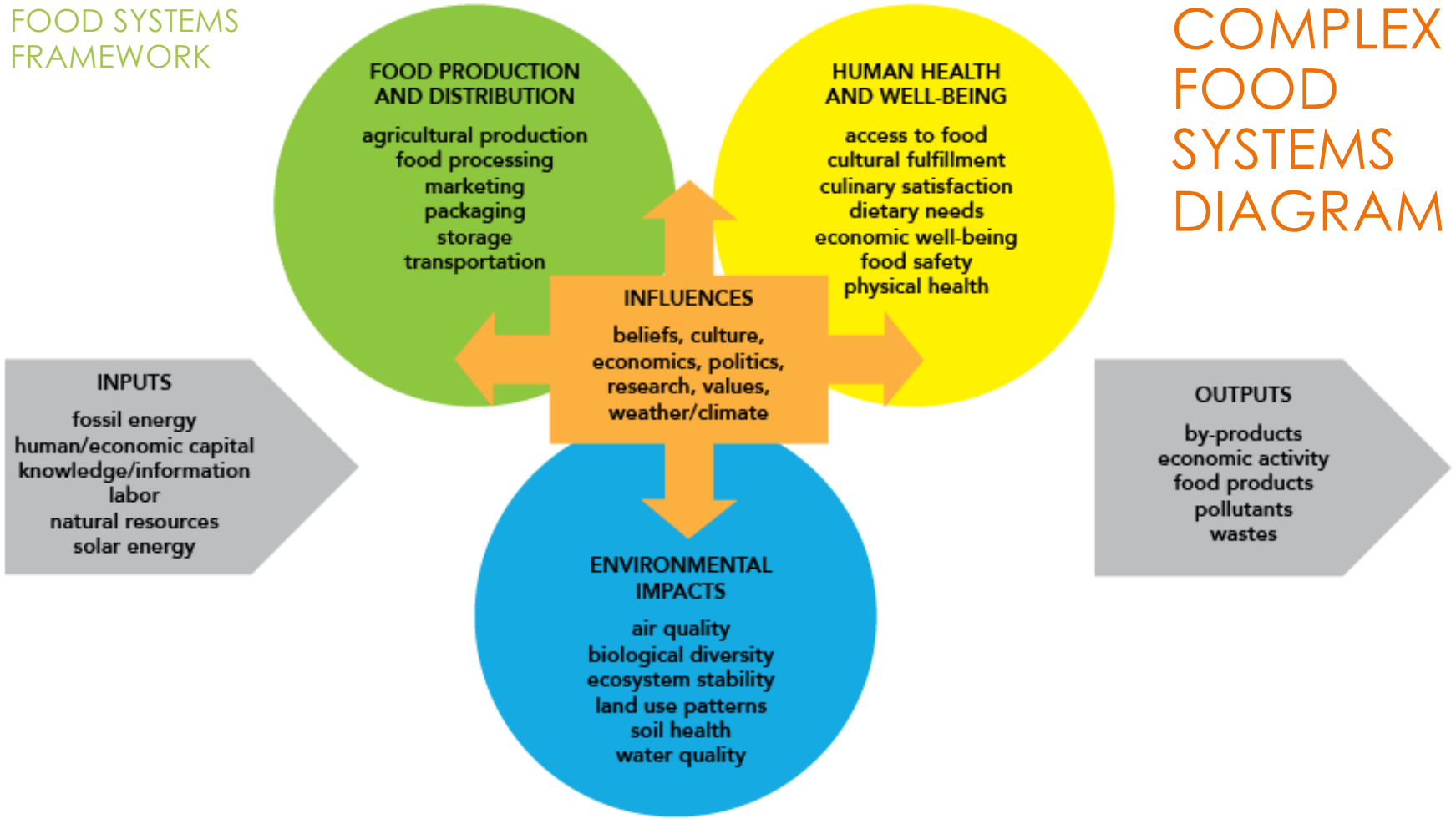
SYSTEMS THINKING

- Systematic thinking means thinking methodically or in a step-by-step manner.
- Systemic thinking is a simple technique for finding system-wide focus.
- **Systems Thinking**
  A mode of thinking that looks at a system as a whole and how parts interact with one another rather than focusing on a single part, in order to better understand complex phenomena.

(Bartlett, 2001; Kasser, 2018; Ponto & Linder, 2011)

FOOD SYSTEMS FRAMEWORK

COMPLEX FOOD SYSTEMS DIAGRAM



Chase, L., & Grubinger, V. (2014). *Food, farms, and community: Exploring food systems*. Durham, NH: University of New Hampshire Press.

SUSTAINABLE FOOD SYSTEMS

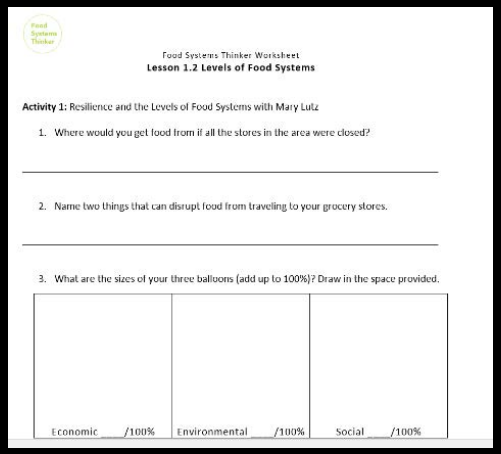
Food systems that aim:

- to achieve food and nutrition security and healthy diets
- while limiting negative environmental impacts
- and improving socio-economic welfare
- especially focusing on protecting biodiversity and ecosystems as well as providing culturally acceptable, affordable, and safe food.

Centro Internacional de Agricultura Tropical. (n.d.). Sustainable food systems. Retrieved from https://ciat.cgiar.org/about/strategy/sustainable-food-systems

INSTRUCTIONAL DESIGN FRAMEWORK

- Self-guided online lessons
  - Real-world local examples
  - Systems thinking practice
- Experiential learning
  - Interaction with farmers
  - Hands-on experiences
- Scaffolding worksheets
- Reflection Questions



Food Systems Thinker Worksheet
Lesson 1.2 Levels of Food Systems

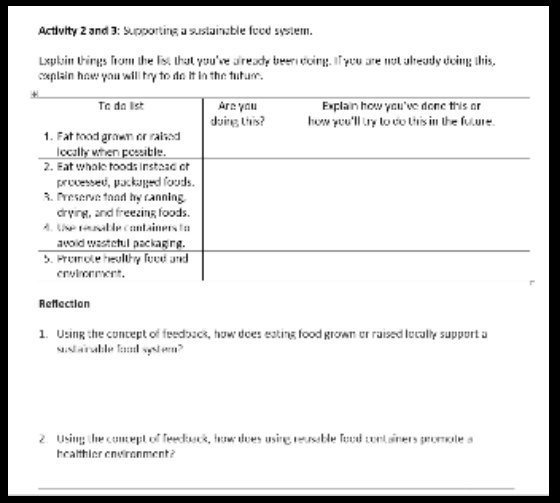
Activity 1: Resilience and the Levels of Food Systems with Mary Lutz

1. Where would you get food from if all the stores in the area were closed?

2. Name two things that can disrupt food from traveling to your grocery stores.

3. What are the sizes of your three balloons (add up to 100%)? Draw in the space provided.

Economic ____/100%	Environmental ____/100%	Social ____/100%



Activity 2 and 3: Supporting a sustainable food system.

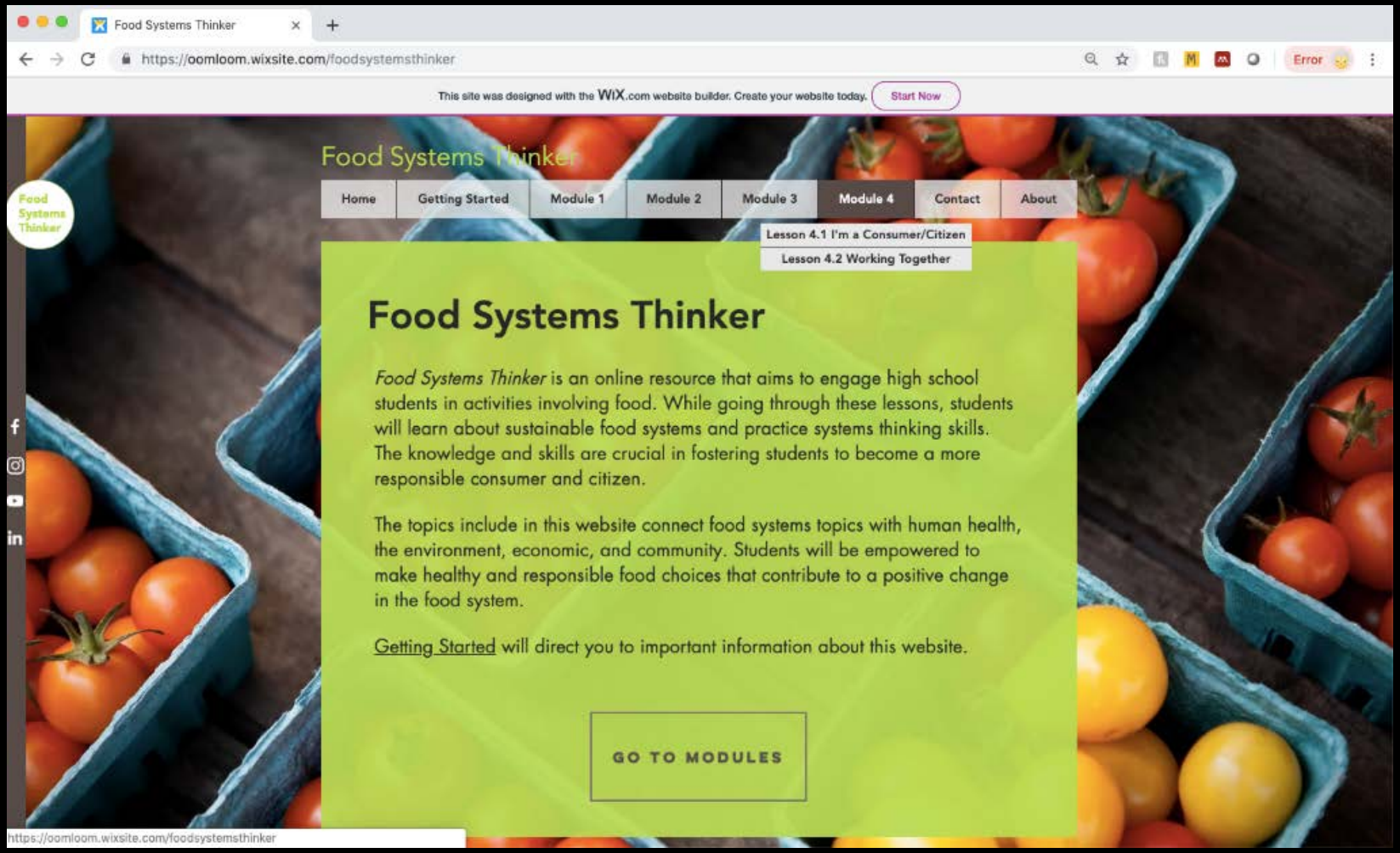
Explain things from the list that you've already been doing. If you are not already doing this, explain how you will try to do it in the future.

To do list	Are you doing this?	Explain how you've done this or how you'll try to do this in the future.
1. Eat food grown or raised locally when possible.		
2. Eat whole foods instead of processed, packaged foods.		
3. Preserve food by canning, drying, and freezing foods.		
4. Use reusable containers to avoid wasteful packaging.		
5. Promote healthy food and environment.		

Reflection

1. Using the concept of feedback, how does eating food grown or raised locally support a sustainable food system?

2. Using the concept of feedback, how does using reusable food containers promote a healthier environment?


Food Systems Thinker
https://oomloom.wixsite.com/foodsystemsthinker
This site was designed with the WIX.com website builder. Create your website today.
Start Now
Food Systems Thinker
Home
Getting Started
Module 1
Module 2
Module 3
Module 4
Contact
About
Lesson 4.1 I'm a Consumer/Citizen
Lesson 4.2 Working Together
Food Systems Thinker
Food Systems Thinker is an online resource that aims to engage high school students in activities involving food. While going through these lessons, students will learn about sustainable food systems and practice systems thinking skills. The knowledge and skills are crucial in fostering students to become a more responsible consumer and citizen.
The topics include in this website connect food systems topics with human health, the environment, economic, and community. Students will be empowered to make healthy and responsible food choices that contribute to a positive change in the food system.
Getting Started will direct you to important information about this website.
GO TO MODULES
https://oomloom.wixsite.com/foodsystemsthinker

ACTIVITY ICONS

	Encourage thinking		Read the text/articles
	Listen to an audio		Watch a video
	Download a worksheet		Highlight ideas/quotes
	Respond to questions or reflect		Additional resources

ONLINE LESSON

MODULE 1: BIG PICTURE

Lesson	Description
A Whole & Its Components	Identification of components and relationships in a food system.
Levels of Food Systems	Boundary for analysis of a food system at six levels from individual to global scale.
Interactions with Other Systems	The dynamics of food systems with other systems such as ecosystem, political system, economic system, climate system, cultural system, and health system.

Before moving forward with this lesson, download and review the worksheet.

Worksheet Lesson 1.1

Instruction: For the worksheet, choose ONE of these food items. Click on your chosen item to learn about its journey in a food system.


Bag of frozen peas


Bag of potato chips


Box of raisins

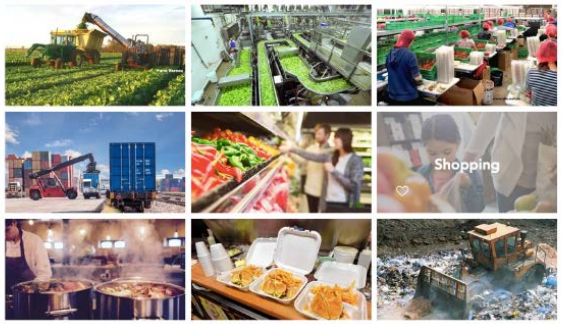

Bag of popcorn

In the worksheet, you will practice systems thinking by highlighting the relationships and interactions in a food system. Examples are provided in the bottom section.

The slideshow below will give you more details about some processes in the modern food systems. While flipping through each image, also think about the components and the relationships between processes and components that bring the food item you chose from the farm to you and then to a disposal facility.

Instruction: Click the first image to start the slideshow of nine images.

Nine Processes in the Modern Food Systems

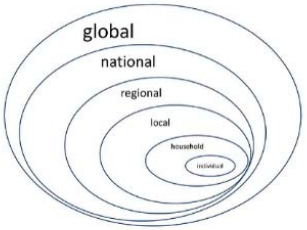


Activity 1: Learn from the video below and respond to questions on the worksheet.

"In Indiana, we can grow everything that our body needs to be healthy"
- Mary Lutz

Say hi to Mary Lutz on Sun and Moon Farm facebook.

Activity 2: Learn about six levels or scales of food systems. These levels, or scales, are often operational at the same time, and they interact with each other.



A food system has a hierarchy of levels, or scales, and each reflects and responds to social, cultural, political, economic, health, and environmental conditions.

INDIVIDUAL

This level is focused on personal decision including how to acquire, prepare, serve, give away, eat, store, and clean food. These decisions and resulting behaviors are influenced by many factors including life experience; cultural and social factors; and the need to balance different values such as affordability and quality. The decisions depend on the situation and can change over time.

Activity 2: Go through the slides to learn about the interactions of food systems with other systems.

POLITICAL SYSTEMS

Political systems dictate food policies, along with environmental, land use, transportation and economic policies related to food supply.

Every single purchase of every food product is a political decision. What you eat is what you vote for.

Activity 3: Watch the video and analyze factors that influence or could have influenced the operation at Trinity Acres Farm.

Say hi to Gary Cox on Trinity Acres Farm facebook

Vocabulary from the video clip

Diverse farming systems - Planting patterns that include two or more species interplanted together, fields that are planted in rotation of different crops, and crop-livestock integration on the farm.

Organic farming - Farming system that eschews use of synthetic pesticides and fertilizers and emphasizes building soil quality.

Community-supported agriculture (CSA) - Program in which consumers and farmers share the risks

ONLINE LESSON

MODULE 2: ZOOMING IN

Lesson	Description
Key Players	Roles of different actors in food systems and various perspectives towards a food system.
The Influencing Forces	Variables influencing and affecting on and influenced and affected by a food system.
Impact of Food Systems	Inputs, outputs, and stock and flow in a food system.

A food system involves many actors. An individual can play various roles in a food system. A role we all have in common is we all are a consumer.

Activity 1: Learn about some of the actors in a food system through the slides.

1. Based on the slides, which role in the food systems are you most interested in doing? Why?

Activity 2: Learn about many different actors and different perspectives in a food system from the video.

Activity 3: Watch this clip to learn from farmworkers' perspectives.

1. What are three hardships that the migrant farmworkers experience?
2. How would the boycotts and strikes help the farmworkers?
3. How would you handle the situation if you were in their shoes?

Activity 2: Read the article and respond to questions. Look for variables that can influence the food systems.

This blatant hypocrisy has catylized Harvard's School of Public Health to take matters into their own hands, creating a version of MyPlate purely from science. Their plate replaces milk with water, tea or coffee, and makes critical distinctions between the 'good' and the 'bad.' (whole grains instead of refined grains, beans and fish instead of bacon, etc).

Harvard Healthy Food Plate

Activity 3: The slideshows present what families around the world eat in one week, how much they spend, and what their food cultures look like.

HUNGRY PLANET: WHAT THE WORLD EATS
Photo by Peter Menzel, Text by Faith D'Aluisio

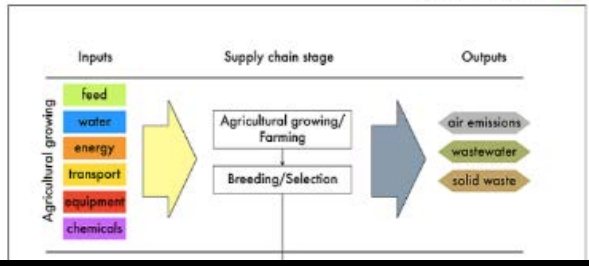
Activity 1: Study the diagram about inputs and outputs in a food system.

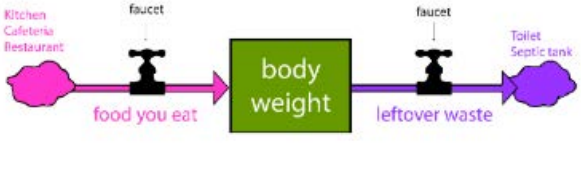
INPUTS are resources and materials entering a system.

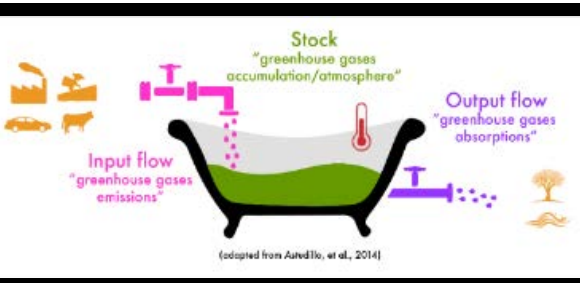
OUTPUTS come out of the system in the forms of:

- by-products: unintended result from producing something else.
- pollutants: gases, smokes, chemicals that make the environment dirty or adversely affect the usefulness of a resource.
- wastes: unwanted or unusable materials.

Download PDF file here







(adapted from Astudillo, et al., 2014)

ONLINE LESSON

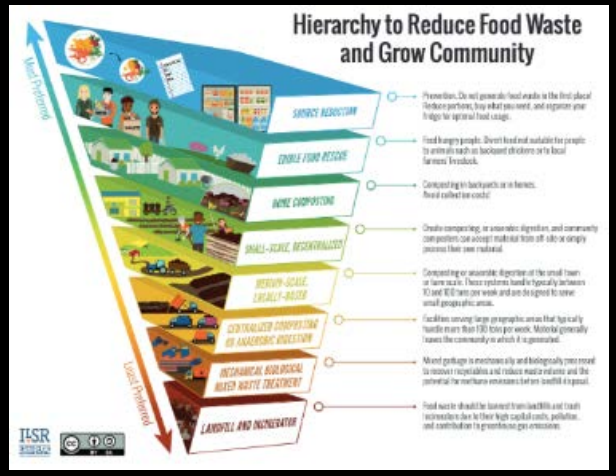
MODULE 3: PROBLEMS & SOLUTIONS

Lesson	Description
Food Waste	The problem of food waste and what a student can do personally to alleviate the problem. Leverage point to intervene by making a change that results in an improvement to the whole system.
Climate Change & Biodiversity	The delay of the effects of climate change. Discussion with a farmer and seed saver on how to use biodiversity to reduce the effects of climate change.

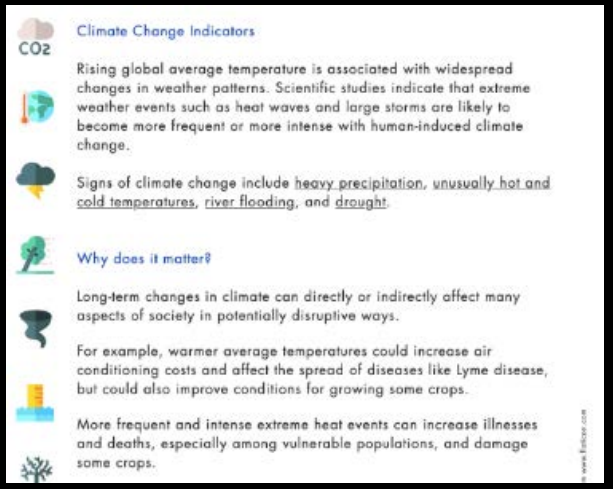
ONLINE LESSON

MODULE 4: ACTION!

Lesson	Description
I'm a Consumer/Citizen.	Discussion about feedback in a food system and how to support a sustainable food system.
Working Together	Discussion about time horizon and how a community garden could address food insecurity.



3. If the fridge starts to get empty, you go shopping for food. The amount of food in the fridge increases depending on how much food you buy. The more food in the fridge, the more cooking you can do. When you cook more, the fridge starts to get empty again.



Climate Change Indicators

Rising global average temperature is associated with widespread changes in weather patterns. Scientific studies indicate that extreme weather events such as heat waves and large storms are likely to become more frequent or more intense with human-induced climate change.

Signs of climate change include heavy precipitation, unusually hot and cold temperatures, river flooding, and drought.

Why does it matter?

Long-term changes in climate can directly or indirectly affect many aspects of society in potentially disruptive ways.

For example, warmer average temperatures could increase air conditioning costs and affect the spread of diseases like Lyme disease, but could also improve conditions for growing some crops.

More frequent and intense extreme heat events can increase illnesses and deaths, especially among vulnerable populations, and damage some crops.

Activity 3: Learn about how John Sherck uses biodiversity on his farm to support a variety of food grown in his region which reduces greenhouse gas emissions during food transportation and distribution. He also uses biodiversity to reduce the impact of climate change.

"The most important point is that more people should learn to grow at least a portion of their own food."
- John Sherck

Say hi to John Sherck on Sherck Seeds facebook page

Activity 3: Learn from nine images about ways you could support a sustainable food system as a citizen.

Ways to Support a Sustainable Food System

Activity 1: Watch a video about a community garden addressing food insecurity.

Say hi to Sharrona Moore on Lawrence Community Gardens facebook page

EXPERIENTIAL LEARNING ACTIVITIES

Activity	Description
Volunteer at Food Pantry	Learning about food insecurity in the community and a food pantry operation.
Sustainable Practices & Closed-loop System	Visiting a diversified organic farm. Learning about composting. Interacting with organic farmers. Planting in high-tunnel or hoop house.
Exploring Kitchen Waste	Observing waste management at home.
Wild Edibles	Being aware of diverse diet from nature.
What Do You Meme?	Investigating packaged and processed food.

QUESTION & ANSWER

The curriculum can be found at
https://oomloom.wix.com/FoodSystemsThinker

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