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)
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.
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

@FoodSystemsThinker
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.
<table>
<thead>
<tr>
<th>Activity Icons</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>📚</td>
<td>Encourage thinking</td>
</tr>
<tr>
<td>🎧</td>
<td>Listen to an audio</td>
</tr>
<tr>
<td>📄</td>
<td>Download a worksheet</td>
</tr>
<tr>
<td>🖊️</td>
<td>Respond to questions or reflect</td>
</tr>
<tr>
<td>📖</td>
<td>Read the text/articles</td>
</tr>
<tr>
<td>🎥</td>
<td>Watch a video</td>
</tr>
<tr>
<td>🟢</td>
<td>Highlight ideas/quotes</td>
</tr>
<tr>
<td>🙅</td>
<td>Additional resources</td>
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</tbody>
</table>
### ONLINE LESSON

#### MODULE 1: BIG PICTURE

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

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.

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

Global
National
Regional
Local

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.

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.

Diverse farming systems: Farming systems 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

<table>
<thead>
<tr>
<th>Lesson</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Key Players</strong></td>
<td>Roles of different actors in food systems and various perspectives towards a food system.</td>
</tr>
<tr>
<td><strong>The Influencing Forces</strong></td>
<td>Variables influencing and affecting on and influenced and affected by a food system.</td>
</tr>
<tr>
<td><strong>Impact of Food Systems</strong></td>
<td>Inputs, outputs, and stock and flow in a food system.</td>
</tr>
</tbody>
</table>
# ONLINE LESSON
## MODULE 3: PROBLEMS & SOLUTIONS

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Waste</td>
<td>The problem of food waste and what a student can do personally to alleviate the problem. <strong>Leverage point</strong> to intervene by making a change that results in an improvement to the whole system.</td>
</tr>
<tr>
<td>Climate Change &amp; Biodiversity</td>
<td>The <strong>delay</strong> 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.</td>
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</tbody>
</table>
## ONLINE LESSON
### MODULE 4: ACTION!

<table>
<thead>
<tr>
<th>Lesson</th>
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</thead>
<tbody>
<tr>
<td>I’m a Consumer/Citizen.</td>
<td>Discussion about feedback in a food system and how to support a sustainable food system.</td>
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<tr>
<td>Working Together</td>
<td>Discussion about time horizon and how a community garden could address food insecurity.</td>
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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

1. Activity 1: Watch a video about a community garden addressing food insecurity.
2. Activity 2: Reduce plastic.
3. Activity 3: Learn about how John Sherick 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 Sherick

Food shopping — Food in the Fridge — Cooking

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, extreme 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.

Hierarchy to Reduce Food Waste and Grow Community

1. Reduce food waste
2. Compost food waste
3. Grow food
4. Reduce reliance on meat
5. Use local and seasonal produce
6. Support local farmers
7. Reduce food transportation
8. Reduce food packaging

John Sherick

Sharron Moore

Say hi to John Sherick on Twitter: @FoodSystemsThinker
Say hi to Sharron Moore on Facebook: Sharron Moore Food Systems
# Experiential Learning Activities

<table>
<thead>
<tr>
<th>Activity</th>
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<tbody>
<tr>
<td>Volunteer at Food Pantry</td>
<td>Learning about food insecurity in the community and a food pantry operation.</td>
</tr>
<tr>
<td>Exploring Kitchen Waste</td>
<td>Observing waste management at home.</td>
</tr>
<tr>
<td>Wild Edibles</td>
<td>Being aware of diverse diet from nature.</td>
</tr>
<tr>
<td>What Do You Meme?</td>
<td>Investigating packaged and processed food.</td>
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</tbody>
</table>
The curriculum can be found at https://oomloom.wix.com/FoodSystemsThinker