



AgriTech in Society: Social Implications for the 21st Century Educational Program Lesson Plans and Curriculum

Prepared by the students of the
Community Innovation Lab

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Introduction

Students from the Community Innovation Lab at the University of Kentucky and Prairie View A&M University collaborated with AppHarvest to produce a collegiate program focusing on social implications of Agri-technology. Specifically, we focused on AgTech/knowledge of technology, Introduction to agriculture and food systems, Urbanization and consumerism, Food insecurity, farming as a business, and Food resiliency and diet. Our collaboration began in August 2020 when students explored student food access and dietary habits within Eastern KY. Results from the study provided a foundation for the current program. As such, we have created a nine-month educational program that culminates with an “Innovation Festival” sponsored by the Community Innovation Lab. The purpose of the festival is to highlight student innovations regarding the intersections between agriculture and societal issues while convening like-minded college students across the region, and provide students with networking and professional development opportunities. Our targeted audience is primary students in grades 5-12 at middle and high schools all across the country.

Our program consists of nine sessions, culminating in an ‘Innovation Festival’. Each workshop is intended to be facilitated once a month for 60-90 minutes. The nine comprehensive sessions are intended to enhance students’ leadership skills (cultural, social, and emotional intelligences) as they apply them toward scientific and social contexts. At the end of the nine sessions, students will convene together at the “Innovation Festival” to provide a lightning talk that showcases their proposed agri-tech innovations to address social problems.

The following document contains all curriculum needed to present the nine-month AgriTech in Society program.

Session 1: Introduction to Agriculture and Food Systems

Session one provides students with a background into the essential industry of agriculture and the subset of food systems. Agriculture is a massive economic driver in the United States, and particularly in Kentucky where it is a \$46.3 billion industry that employs over 260,000. Agriculturalists produce, process, and manufacture food, fuel, and fiber products that impact us each and every day. This session will provide students with a background into the essential industry of agriculture, with a focus on food systems in particular.

Upon completion of this lesson, students should have an established understanding of the agricultural industry and the impacts it has on society.

Objectives

At the end of this unit, participants should be able to:

- Outline the process of food production from farm gate to grocery store.
- Identify ways in which their daily lives are impacted by agriculture, and what ways Kentucky farmers impact them.
- Compare the cultural differences of families and communities on where food is located, consumed and bought.

Student Evaluations

All student evaluations will be conducted in the form of a reflective self-assessment at the conclusion of each session. The evaluation for session one can be found on page 8 After the session has been completed, students will rank their abilities on certain topics, before and after the session, on a Likert scale.

Materials and Resources

Materials and resources for each activity are presented in detail in the activity description. Overall, facilitators will need flipcharts, markers, laptops or computers for students (could be substituted for students' cell phones), and the provided content.

Activity One: Lecture on Agriculture and Food Systems

Activity Two: Discussion on the Impacts of Agriculture

Activity Three: Food and Culture

Activity One: Lecture on Agriculture and Food Systems

Background

Agriculture is an often overlooked industry, but one that provides us with the food, fuel, and fiber we need to survive each and every day. While there are over 2 million farms in the United States, agricultural workers make up less than 1.3% of the workforce. In a time where the disconnect between the public and those who produce their food is growing, agricultural literacy and education is vastly important. This activity focuses on the basics of agriculture and food production systems to introduce students to the topic as they complete this program focusing on the societal impacts of agriculture.

Activity

- **Utilize the provided Powerpoint found in Appendix A** to guide students through a lecture and discussion focusing on agriculture. This activity begins with a five-minute group discussion where students will be shown a photo of a finished food item (i.e. hamburger patty), and are asked to identify the different steps of the food production process. Students will then be shown a photo and video clip that provides the correct process that food takes from farm to fork.

Activity 2: Discussion on the Impacts of Agriculture

Background

Even in heavily agricultural areas, there is often still a disconnect between farmers and others in the community. Farming has become almost an abstract concept to many Americans, and the impacts of agriculture are not always recognized. This activity encourages group discussion on the many ways in which farming and agriculture makes a difference in our lives each and every day.

Facilitator Notes

- Students should be split into groups based on class size, but ideally no more than four to five students
- Groups will be given a flipchart sheet/whiteboard and markers on which to write their lists. Encourage creativity in the way that the lists are created and presented (i.e. drawings or things to be more interesting than just a bulleted list). Students should be given five minutes to complete this portion of the activity.
- The next five minutes of the activity will allow students to share their findings and identify similarities and differences between what their group identified and what others identified as well.
-

Activity

- Following the same powerpoint, facilitators should guide students through a more in depth discussion of food systems and the ways in which these systems are prominent in Kentucky. Students will then be split up into groups to brainstorm ways in which agriculture has an impact on their lives. Each group will list these ways on a flip chart and present to the class.

Discussion Questions

- What were some of the first things that came to mind when you thought of agriculture?
- What did your classmates bring up that you were most intrigued by?
- How did you view agriculture similarly, or differently, than your groupmates?
 - o Why do you think that your beliefs were different from those around you?
- In what ways does agriculture have a strong impact on your local community?

Activity 3: Food and Culture

Background

Food and the practices surrounding it have long been a strong piece of different cultures. Harmony is emphasized in Chinese culture as critical to life, so in turn, food must be delicately balanced to ensure all flavors are harmonious and equal. In many Mediterranean countries, food is a driver of social life and is often shared with groups of friends. No matter what culture(s) you consider yourself a part of, food and eating likely play a big part in cultural experiences. This activity provides students with the opportunity to learn more about the role that food plays in different cultures, and reflect on its presence in their own culture(s).

Facilitator Notes

- Students should stay in the same groups from activity two for this activity, and will be assigned one of the following geographic regions to analyze the culture and impact of food and eating (or another applicable culture)
 - o Southeast Asia (Singapore, Vietnam, Philippines)
 - o The Mediterranean Region (Greece, Italy, Spain)
 - o North Africa (Algeria, Morocco, Tunisia etc.)
 - o Mexico and Central America
 - o East Asia (China, Japan, South Korea)
 - o Indigenous cultures around the world

Activity

- Students will work with their groups to research a given culture and how food plays a role in that culture. Each group will develop a flipchart or powerpoint slide detailing their assigned culture and the ways in which food and agriculture are uniquely involved. Groups will then present to the class (no longer than 2-3 minutes) about their given culture and the ways in which food and the eating process are important to that group of people.

Discussion Questions

- Did you have a lot of background knowledge on your assigned culture? What were some of your initial thoughts about that culture?
- How did your initial thoughts align, or differ, from what you learned during your research?
- In what ways did this culture view food or agriculture differently than your personal culture? In what ways did their views align?
- What was the most interesting thing you learned, either from your own research or the presentations done by other groups?

- Name a few ways in which food and eating took on a greater meaning for your group's culture.
- Can anyone summarize how food and culture are interwoven in just a few sentences?

Formative Assessment Process

Please estimate your level of ability by circling one of the following using a scale of 1-5, with 1 being poor and 5 being excellent. Note that you are asked to consider your estimate **before** the session and **after** the session.

Before This Session					<i>I feel confident in my ability to...</i>	After This Session				
Poor				Excellent		Poor				Excellent
1	2	3	4	5	1. List the various stages of food production.	1	2	3	4	5
1	2	3	4	5	2. Identify impacts of agriculture on human's daily lives	1	2	3	4	5
1	2	3	4	5	3. Having an awareness of the impacts of food on different cultures	1	2	3	4	5
1	2	3	4	5	4. Identify local farming operations within their community	1	2	3	4	5

Session 2:

Societal Reactions Toward Agriculture and Food

Session two provides students with information on establishing cultural, social, and emotional influences regarding agriculture in local communities. Kentucky's agriculture is imperative to the health of Kentuckians and the farmland that surrounds them. Food plays an essential role in your everyday life. Food allows you to fuel your body to provide energy for activity, growth, and all functions of the body. Food not only affects you, but it can have major effects on their family and community members.

Upon completion of this lesson, students should have an established understanding of cultural, social, and emotional influences regarding agriculture and local communities.

Objectives

At the end of this unit, participants should be able to:

- Outline the social impact food has on families and community members.
- Outline communities' access to food in their areas such as town, city, or county.
- Compare how food affects people emotionally, physically, and psychologically.

Student Evaluations

All student evaluations will be conducted in the form of a reflective self-assessment at the conclusion of each session. The evaluation for session two can be found on page 12. After the session has been completed, students will rank their abilities on certain topics, before and after the session, on a Likert scale.

Materials and Resources

Materials and resources for each activity are presented in detail in the activity description. Overall, facilitators will need Projector, projector screen, paper, makers, poster boards, laptops for each group (could be substituted for students' cell phones), and the provided content.

Activity One: Lecture on social impacts of food

Activity Two: Discussion on food banks and grocery stores

Activity Three: Food affecting mood

Activity One: Lecture on Social Impacts of Food

Background

Social impacts on food are sometimes not considered when making changes to communities. Food insecurity has one of the most extensive impacts on the overall health of individuals. The United States Department of Agriculture found that food insecurity affects 11 percent of U.S. households. Social impacts include only poverty, but also by other issues such as affordable housing, social isolation, location, and chronic health issues. Households with limited income often face unwelcome tradeoffs between food and other types of necessities.

Activity 1:

- Utilize the provided video and questions, linked below

To guide students through a lecture and discussion focusing on social impacts on food in communities or home life. This activity begins with a ten-minute class discussion what food means to them, their family and their community. Students will draw a picture or diagram using paper and markers. Students will be shown a video clip on the “importance of eating together” and then answer a series of follow up questions after the clip after everyone has completed the drawing. <https://www.youtube.com/watch?v=1iqVLcgr5x0>

Follow- Up Questions:

1. Have you ever eaten with another friend, family or community member’s family?
2. At what age do you remember eating with your family?
3. What is the center of your home?
4. What does the kitchen table represent in your household?
5. What are your meal time conversations that bring joy?
6. Does it matter where you and your family eat together?

Activity 2: Discussion on Food Banks and Grocery Stores

Background

A video titled “Project Community: Importance of Community Food Banks”. This video explains that with community help and assistance families can receive assistance no matter their income or social status. Community food banks are operated by volunteers for distribution and run by facilitators to receive donations and volunteers. This video shows that everyone goes through hard times and sometimes it’s as simple as not having enough money to cover a bill. Community food banks are there to support you in situations like those.

Activity 2:

- Utilize the provided video and questions, linked below

Students will have a group discussion in groups, once students have joined their group they will discuss what it looks like for them to go to the grocery store and where do they shop to get their food? Once they have discussed as some group, students will watch a brief video clip and answer questions below. Lastly students will work with group members to draw a reflection map of county on what stores are around their home they shop.

<https://www.wvtm13.com/article/project-community-importance-of-community-food-bank-of-central-alabama/29836630#>

Follow-up Questions

1. Where are local food assistance places in your community?
2. What is the impact on community members having access to food pantries and food assistance?
3. How can you educate the community on food banks and food assistance programs?

Activity 3: Food Affecting Mood

Background

Food is how we survive everyday along with our basic resources. Knowing what foods, we should and should not eat can be really confusing, especially when one and seven adults are suffering from food insecurity. Evidence has shown that food affects our physical and mental health, what we eat may also affect the way we feel as well. Food insecure adolescents are at an increased risk for mental health disorders. Eating the wrong foods can also cause your mood to change, eating junk food feeds bad bacteria and can cause a spike in “feel good” neurotransmitters.

Facilitator Notes

- Students should stay in the same groups from activity two for this activity, and will be assigned one of the following emotional, physically and psychologically that are affected by food.

Activity

- **Utilize the provided video and questions, linked below**

Students will watch a short clip and answer questions on the video “how does your diet impact health?” Once the video and questions are answered, students will work with their groups to research a given topic (emotional, physically and psychologically) role and how it affects someone day to day and over the course of their life. Students will utilize laptops to research topics assigned and complete a PowerPoint to represent why food matters to their topic.

<https://www.youtube.com/watch?v=fhzn3IC7cc0>

Follow-up Questions

1. Has food affected your mood?
2. What does your diet look like?
3. What does a well balanced diet look like?



Formative Assessment Process

Please estimate your level of ability by circling one of the following using a scale of 1-5, with 1 being poor and 5 being excellent. Note that you are asked to consider your estimate before the session and after the session.

<u>Before</u> This Session					<i>I feel confident in my ability to...</i>	<u>After</u> This Session					
Poor						Excellent		Poor		Excellent	
1	2	3	4	5	1. Identify social food impact on families and communities	1	2	3	4	5	
1	2	3	4	5	2. Identify community outlets to food	1	2	3	4	5	
1	2	3	4	5	3. Have an awareness for food insecurity in my communities	1	2	3	4	5	
1	2	3	4	5	4. Identify social norms of food	1	2	3	4	5	

Session 3:

Food Systems

Session three provides students with information on an established understanding of recognizing local food systems and food deserts. Across Kentucky thousands of people live within food deserts, meaning they cannot easily get health, affordable food. Poor access to food is linked to higher rates of illness and lowered life expectancy in predominantly low-income neighborhoods. People who do not have access to nutritious food often consume a bad diet, meaning eat whatever you can find to not have an empty stomach.

Upon completion of this lesson, students should have an established understanding of recognizing local food systems and food deserts, and the impact of food systems.

Objectives

At the end of this unit, participants should be able to:

- Define local food systems, and identify their importance.
- Define food deserts and their impact on communities.
- Analyze food deserts in their local area and impact.

Student Evaluations

All student evaluations will be conducted in the form of a reflective self-assessment at the conclusion of each session. The evaluation for session one can be found on page 16. After the session has been completed, students will rank their abilities on certain topics, before and after the session, on a Likert scale.

Materials and Resources

Materials and resources for each activity are presented in detail in the activity description. Overall, facilitators will need Projector, projector screen, magazines, poster board, scissors, markers and laptops for each group (could be substituted for students' cell phones), and the provided content.

Activity One: Lecture on food systems

Activity Two: Discussion on what is a food desert

Activity Three: Food access

Background

Food systems provide processes and infrastructure involved in feeding a population; growing, harvesting, processing, packaging, transporting, marketing, consumption, distribution and disposal of food products. Issues concerning the food system include governance and economics of food productions, its sustainability, the degree to which we waste food, how food production affects the natural environment and the impact of food on individual and population health. The food system includes not only the basic elements of how we get our food from farm to fork, but also all of the processes and infrastructure involved in feeding a community.

Activity 1:

- Utilize the provided video and questions, linked below

To guide students through a lecture and discussion for five minutes, focusing on food systems in a community (consumption, production, processing and distribution) and why food systems are important to not only yourself, community and state. Students will watch a brief clip “What is a local food system?” After the video students will then answer questions below.

<https://www.youtube.com/watch?v=yDIwVczAXRg>

Follow- Up Questions:

1. What is a local food system?
2. Is the demand higher than the supply in local food systems?
3. What is the food system process?
4. Why is it hard for farmers to market their products?



Activity 2: Discussion on What is a Food Desert

Background

An atlas linked “Food Access Research” from the United States Department of Agriculture shows not only the state of Kentucky but the United States on areas that are defined to be food deserts. Food deserts are areas where people have limited access to a variety of healthful foods. This may be due to having limited income or living far away from sources of healthful; and affordable food. The United States Department of Agriculture (USDA) defined food deserts as areas that have a poverty rate greater than or equal to twenty percent. In order to qualify as a food desert, an area must also meet certain other criteria. In urban areas, at least 500 people or thirty-three percent of the population must live more than one mile from the nearest large grocery store. In rural areas, at least five hundred people or thirty-three percent of the population must live more than 10 miles from the nearest large grocery store.

Activity 2:

- Utilize the provided video and questions, linked below

Students will have a group discussion in groups, once students have joined their group, groups will research on laptops how far their home is from their local grocery store, students will be required to map out four grocery stores in their area that they travel to. Students will then compare mileage to group members from their homes to the grocery stores. Students will then use poster boards to compare and contrast results with group members. After the group work is complete students will review the USDA atlas map and answer the follow up questions below.

<https://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas.aspx>

Follow-up Questions

1. What counties and regions are being represented in Kentucky as food deserts?
2. Do you see a pattern of the highlighted areas that are represented as food deserts on the map?
3. Are there more areas highlighted green around urban city areas compared to rural areas?

Activity 3: Food Access

Background

Healthy food access continues to be a critical factor for improving physical and economic health and well-being of communities. Healthy food access is the primary need in low income communities, whether they are urban or rural areas. Access is considered to be the foundation for the positive benefits associated with healthy foods, and without access to healthy foods, nutritious diets and good health are impossible to accomplish.

Facilitator Notes

- Students should stay in the same groups from activity two for this activity, students will work with group members to research alternative ways communities can access food.

Activity

- Utilize the provided video and questions, linked below

Students will watch a short clip and answer questions on the video “Garden Girl Foods to address Louisville food deserts.” Once the video and questions are answered, students will work with their groups to research alternative methods to access food in a food desert community. Students will utilize laptops for research and discuss with group members organizations that assist with food access. <https://www.youtube.com/watch?v=YWIPQdsQ5uE>

Follow-up Questions

1. How can you change food access?
2. How can you educate community members on the lack of resources?
3. What is the Garden Girls goal in Louisville, KY?
4. What does the USDA food tracker show on the video?
5. Does the video talk about the lack of transportation to grocery stores?

Formative Assessment Process

Please estimate your level of ability by circling one of the following using a scale of 1-5, with 1 being poor and 5 being excellent. Note that you are asked to consider your estimate before the session and after the session.

<u>Before</u> This Session					<i>I feel confident in my ability to...</i>	<u>After</u> This Session				
Poor				Excellent		Poor				Excellent
1	2	3	4	5	1. Identify food systems and explain how they work	1	2	3	4	5
1	2	3	4	5	2. Identify food deserts and their impacts on communities	1	2	3	4	5
1	2	3	4	5	3. Have an awareness of community food assistance	1	2	3	4	5
1	2	3	4	5	4. Identify what community means to me	1	2	3	4	5

Session 4:

Urbanization and Consumerism

Session four gives students an opportunity to learn more about urban agriculture and the impacts of consumerism on agriculturalists. According to the Food and Agriculture Organization of the United Nations, Urban and peri-urban farms already supply food to about 700 million city dwellers, one-quarter of the world's urban population. As the world becomes more urbanized more people are separated even further from where their food is grown and produced. Agriculturalists have begun to adapt to changing consumer preferences, and more people have begun to adapt urban agricultural practices to help combat food insecurity.

Upon completion of this lesson, students will be able to define and describe the effects of urbanization and consumerism on agriculture and food systems.

Objectives

At the end of this unit, participants should be able to:

- Identify common characteristics of urban agricultural operations.
- Describe the ways in which consumer interests impact agriculture.
- Design an urban garden through identifying characteristics of successful urban agricultural spaces.

Student Evaluations

All student evaluations will be conducted in the form of a reflective self-assessment at the conclusion of each session. The evaluation for session one can be found on page 20. After the session has been completed, students will rank their abilities on certain topics, before and after the session, on a Likert scale.

Materials and Resources

Materials and resources for each activity are presented in detail in the activity description. Overall, facilitators will need flipcharts, markers, laptops or computers for students (could be substituted for students' cell phones), and the provided content.

Activity One: Lecture on Urban Agriculture

Activity Two: Discussion on the Consumerism and Agriculture

Activity Three: Designing a Community Garden

Activity One: Lecture on Urban and Rural Agriculture

Background

Agriculture is often viewed as a primarily, if not solely, rural venture, with red barns dotting the landscape of multi-thousand acre crop fields. As the world's population has become more urbanized, the number of farms in the US has decreased dramatically and the dwindling number of farms continues to have to feed and clothe a growing population. Along with the impact of a growing population, agriculturalists have to adapt to shifting consumer interests. This lecture provides an introduction into urban agriculture and compares urban and rural farming operations.

Activity

- **Utilize the provided powerpoint, found in Appendix B** to guide students through a lecture and discussion focusing on urban agriculture. This activity begins with a video showcasing an 'agri-hood' in Detroit. Students will then be led through a lecture where they will look into the differences between urban and rural farming, similarities between the two, and the ways that different types of farming serves different communities.

Discussion Questions

- What comes to mind when you think about a rural farm? An urban farm?
- Are there differences in the purposes that urban and rural agricultural operations serve? What are some of the similarities and differences?
- In what ways do different types of agriculture serve their community?

Activity 2: Discussion on the Impacts of Consumer Interests

Background

As in any industry, demand has a large impact on the agricultural economy. With such short profit margins, farmers are drawn towards the commodities that will allow them the greatest profit while still being compatible with their local climate, and not too difficult to grow. Consumers play a large part in the choices that farmers make, be it simply what crops are popular in certain areas of the country, or specific trends like organic or grass-fed, the greatest consumer interests will typically yield greater profits. This activity features a short lecture on the impacts on consumerism, and prompts students to analyze their own preferences.

Facilitator Notes

- Students will reflect on their own top three personal consumer preferences for 2-3 minutes.
- Upon completion of this time, students will be divided into groups with others who share the same or similar career preferences.
- Groups should be provided with flipcharts and markers to create a catchy poster to promote their specific consumer preference to farmers (ways they'll need to adjust, why this is a valuable adjustment, what crops they can grow, etc.)
- Groups will then present their findings to the class as a whole.

Activity

- Students will spend a short period of time reflecting on their personal consumer preferences, then group up based on some of these preferences (i.e. organic, vegan, traditional diet, etc.). Once in groups they will brainstorm some of the ways that farmers and producers have adjusted or will have to adjust to meet the needs of consumers.

Discussion Questions

- What were some of the factors that lead you to this particular preference?
- Did your group members have similar reasoning? If not, what different ways did you all come to prefer this type of food?
- In what ways does your preference impact farmers?
- Do they have to grow or process the commodity differently?
- What are some consumer trends you think will become more prominent in the future?

Activity 3: Food and Culture

Background

Urban and/or community gardens and agricultural operations are becoming more and more prominent as society in the United States slowly begins to tackle food insecurity. Empty lots around the country have been transformed into communal areas for members of these communities to tend to and harvest fresh, nutritious produce. There is not a one size fits all mold for an urban garden, as it needs to be adapted to the needs and interests of the community to be successful and have an impact. This activity combines urbanization with consumer interests as students develop an urban garden for a randomly assigned city.

Facilitator Notes

- Students should stay in the same groups from activity two for this activity, and will be assigned one of the following cities to develop a community garden in. For larger cities, students can specify a certain neighborhood or area, and take inspiration (but not outright copy) what other locations have done.
 - o Dearborn, Michigan
 - o Somerset, Kentucky
 - o Atlanta, Georgia
 - o Denton, Texas
 - o Cincinnati, Ohio
 - o Indianapolis, Indiana
- Students will need to use computers, laptops, phones or other technology to research what plants to include in the garden, where it should be located, and any other features
- This activity will take nearly half of the class between the research and development portion and short presentations. Allow students to take their time but be mindful of the time left in the session.

- Encourage students to draw out on a flipchart sheet what the garden might look like, what some crops may be, and some features that emphasize the city it is in. Powerpoint slides are acceptable, but drawing the garden would likely push for more creativity.

Activity

- Groups will design a concept for an urban garden based upon a randomly chosen community. They will research what crops should be planted, where in the community it should be located, and any other important factors they believe should be included. They will then do a short presentation to the class about their garden.

Discussion Questions

- That factors did you take into account when choosing the plants, layout and location of the garden?
- Would you implement the same garden in your hometown?
 - o What are some aspects of a garden you would install in your hometown?
- What benefits do urban farms/gardens have for communities?
- What was the most surprising thing your group chose to include in the garden?
- In what ways can agriculture bring people together?

Formative Assessment Process

*Please estimate your level of ability by circling one of the following using a scale of 1-5, with 1 being poor and 5 being excellent. Note that you are asked to consider your estimate **before** the session and **after** the session.*

<u>Before</u> This Session					<i>I feel confident in my ability to ...</i>	<u>After</u> This Session				
Poor				Excellent		Poor				Excellent
1	2	3	4	5	1)Detail the characteristics of urban agricultural operations	1	2	3	4	5
1	2	3	4	5	2)Identify similarities and differences between urban and rural farming operations	1	2	3	4	5
1	2	3	4	5	3)Describe the idea of consumerism and its impacts on food production	1	2	3	4	5
1	2	3	4	5	4) Identify characteristics of a successful urban garden	1	2	3	4	5

Session 5:

Food Insecurity

This lesson was developed to introduce participants to community well-being, by discussing food insecurity. The topics analyzed in this lesson will explain food insecurity, impact on the human body and the environment, how students can identify countries that are food insecure using the hunger map, compare pictures to clearly show what food insecurity is truly like and watch a video that explains the truth about food insecurity. “Food insecurity is often mentioned in areas that look very upkept or most third-world countries, however the concept of food insecurity can be found anywhere. The lesson will further explain the definition of food insecurity, who can be affected, reason why and provide possible solutions to the problem.

Objectives

At the end of this lesson, students should be able to:

- Describe what food insecurity is, factors that lead to it, and possible solutions.
- Identify countries that experience or are experiencing food insecurity and determine why.
- Outline what it feels or look like to be food insecure?

Activity 1: Define Food Insecurity

Activity 2. What is a hunger map?

Activity 3. YouTube video “The Truth about Food Insecurity”

Activity 4. Visual identification of food insecurity

Student Evaluations

All student evaluations will be conducted in the form of a reflective self-assessment at the conclusion of each session. The evaluation for session 5 can be found here, and on page 25 <https://documentcloud.adobe.com/link/review?uri=urn:aaid:scds:US:5baa1472-c8aa-4e99-8b18-b7b78bda8807>. After the session has been completed, students will rank their abilities on certain topics, before and after the session, on a Likert scale.

Materials and Resources

Materials and resources for each activity are presented in detail in the activity description. Overall, facilitators will need projector, markers, pen and paper, maps, pictures, youtube videos, printed lecture notes, and the provided content.

Activity 1. Define Food Insecurity

Background.

According to the United States Department of Agriculture (USDA), food insecurity is defined as the lack of consistent access to enough food for an active, and healthy life. Hunger can be associated with food insecurity, and this is described to be a personal, and physical sensation of discomfort. In 2018, 1 in 9 Americans were food insecure, which is over 37 million Americans,

that includes over 11 million children. There are several causes of food insecurity which includes, lack of affordable housing, social isolation, Chronic or acute health problems/cost, low wages, and many more. For example, if a person is in a nice environment and cannot access fresh food for a quality and healthy life within a one-mile radius for urban households and 10 miles radius in the rural community, the person is food insecure. However, there are 4 branches of food security and if you don't fall under this then you are food insecure.

The purpose of this activity is to understand the definition of food insecurity, it causes, facts associated with food insecurity and ranges of food security. The activity will also show students a 2mins video about Brittany Hunger story to really understand how food insecurity can affect the home.

- <https://hungerandhealth.feedingamerica.org/understand-food-insecurity/>
- <http://map.feedingamerica.org/>

Activity

The facilitator will display the above links on the projects and explains to students the information provided

- What is food insecurity?
- Who does food insecurity affect?
- Ranges of food security
- Watch 2 mins video of Brittany family Hunger story
- Explain how to use the food insecurity map to the students

Discussion Questions

1. What is the definition of food insecurity by the USDA?
2. One in how many Americans suffered from food insecurity in 2018?
3. Who does Food insecurity affect?
4. Use the map to identify your district and state the percentage of food insecurity in your environment?
5. What is the number of food insecure populations in the United States?
6. What is the food insecurity rate in the United States as a percentage?
7. What resonated with you when you watched the Brittany Hunger story?

Activity 2. What is a hunger map?

Background

According to world hunger.org, hunger is defined as a short- term physical discomfort as a result of chronic food shortage, or in severe cases, a life- threatening lack of food. (National Research Council, 2006). It further explains world hunger as hunger aggregated to the global level. Food insecurity and malnutrition are collectively associated with hunger. Although malnutrition includes both overnutrition and undernutrition, the focus for global hunger is undernutrition. <https://www.worldhunger.org/world-hunger-and-poverty-facts-and-statistics/#definitions>

The 2019 World Food Programme (WFP) hunger map depicts the prevalence of the undernourishment in the population of each country. If current trends continue, the number of

hungry people will reach 840 million by 2030. This map will provide students with the information needed to learn more about the biggest single risk to global health.

Activity

Students will be divided into seven groups representing each continent. The purpose of this activity is to identify countries with the highest and lowest hunger rate and share what they have observed with their fellow classmates in other groups. Also, this activity will make the students globally aware of hunger and the importance it has in certain parts of the world.

https://docs.wfp.org/api/documents/52c3c66390dc436da192ea782a2bdb3d/download/?_ga=2.117573129.1823740425.1620155701-1717927046.1620155701

Discussion Questions/ Take home assignment

1. Identify 5 countries of your choice and state their undernourishment percentage?
2. Which part of the continent has less than 2.5% undernourished people?
3. What does the colors on the map represent?

Activity 3. YouTube video “The Truth about Food Insecurity”

Background

A video titled “The Truth about Food Insecurity” is on YouTube by the name “Second Thought”. This video explains the global effect of food insecurity and recommended solutions. The video also mentioned a lot about the main reason behind food insecurity and it stated that even though population is a result of food insecurity, it is not considered the main reason. Students will figure out from this video other reasons that cause food insecurity. The video will be played to further understand the concept of food insecurity and questions will be derived from the video.

Activity

Facilitator will project this 13 mins video to the students, and the students are responsible to take notes while watching to answer the following questions that will be printed to them.

https://www.youtube.com/watch?v=j08ND3_PNGs&t=17s

Follow-up Questions:

1. What is the world population?
2. In what year did the population double?
3. What did Robert Malthus do to address food security?
4. How many people die from hunger every year?
5. How many percent of the people dying are children?
6. Which country suffers from the US sanctions leading to the ratio and food shortages?
7. What are the causes of food shortages?
8. List the facts about the food system?
9. What problem do we have today in the food industry?
10. What animal produce will the world run out of in 2028?
11. What conditions do farm animals live in to increase disease outbreak and affect human health?

12. The Agricultural industry produces more greenhouse emission compared to the Transportation industry, True or False?
13. What is Eutrophication?
14. List the solutions to tackle food insecurity?

Activity 4. Visual identification of food insecurity

Background

This activity is a visual concept of food insecurity where students will boldly see what being insecure does to the body, the reason why people eat unhealthy food, and what the store looks like when a particular place is food insecure.

Activity

This is an individual activity. Students will be handled a colored printed paper that has the pictures. Students will use these pictures to identify and understand the concept of food insecurity.

<https://depositphotos.com/31067619/stock-photo-black-child-holding-rotten-apple.html>

<https://depositphotos.com/445129430/stock-photo-empty-shelves-grocery-store-covid.html>



Follow up question:

From the above pictures, give me 4 reasons why you will consider it food insecurity?

Formative Assessment Process

Please estimate your level of ability by circling one of the following using a scale of 1-5, with 1 being poor and 5 being excellent. Note that you are asked to consider your estimate **before** the session and **after** the session.

<u>Before</u> This Session Poor Excellent	<i>My level of ability in the following:</i>	<u>After</u> This Session Poor Excellent
1 2 3 4 5	1) knowledge about food insecurity.	1 2 3 4 5
1 2 3 4 5	2) Identify food insecurity and the reasons behind it.	1 2 3 4 5
1 2 3 4 5	3) Being more aware of the impact of food security on my health, physically, socially and mentally	1 2 3 4 5
1 2 3 4 5	4) Clearly identify places and countries that are food insecure.	1 2 3 4 5

Session 6:

Food Resiliency and Diet

Objectives

At the end of this lesson, students should be able to:

- Define food resiliency in the United State and across the globe.
- Identify plans put in place by governments to combat food resiliency.
- Describe the facets of a good diet, and the impact it can have on human lives.

Activity 1: Concept of Food Resiliency/ Policy

Activity 2. Food Stations Experiment

Activity 3. Fast- Food Restaurants Map Identification

Student Evaluations

All student evaluations will be conducted in the form of a reflective self-assessment at the conclusion of each session. The evaluation for session 6 can be found here and on page 29. <https://documentcloud.adobe.com/link/review?uri=urn:aaid:scds:US:857c904d-9da1-4ef8-8bdd-823b34686646>. After the session has been completed, students will rank their abilities on certain topics, before and after the session, on a Likert scale.

Materials and Resources

Materials and resources for each activity are presented in detail in the activity description. Overall, facilitators will need flipcharts, markers, pen, pencil, projector (could be substituted for students' cell phones), and the provided content.

Activity 1. Concept of Food Resiliency/ Policy

Background

In this session, students will be introduced to the concept of Food system Resiliency. Resilience has roots in the Latin word *resilio*, meaning “to jump back” (Klein, Nicholls, and Thomalla 2003). According to an article titled “Food Systems Resilience: Concepts & Policy Approaches” by Jenileigh Harris et al, it stated that in 2017, Hurricane Maria destroyed around 80 percent of Puerto Rico’s agricultural production for that year. However, the Secretary of Puerto Rico’s Department of Agriculture Carlos Flores Ortega expressed early optimism that the agricultural sector could recover from its losses and rebuild stronger for the next hurricane. This is a typical example of food resiliency across the globe. It also noted that severe storms and other natural disasters can significantly disrupt the food system process whenever it happens.

The outcome of this activity is for students to understand food resiliency and policies placed to making sure the community can withstand future natural disasters.

<https://www.globalhungerindex.org/issues-in-focus/2013.html>

https://www.nal.usda.gov/sites/default/files/food_systems_resilience_concepts_policy_approaches_final.pdf

Activity 1.

Students are going to be taught by the facilitator through a PowerPoint about the understanding of Food System Resilience. After the teaching, follow up questions will be asked, and students will be able to discuss.

PowerPoint

<https://documentcloud.adobe.com/link/review?uri=urn:aaid:scds:US:09b68d97-587e-4684-be91-377c7d0ecb0d>

Follow-up Questions

1. What is resilience according to USAID definition?
2. Define food security described by the State of Food Insecurity, 2001?
3. List the 4 pillars of food security and explain 2?
4. List all the characteristics for a food system resilience policy and explain one as it relates to availability, accessibility, and utilization?

Activity 2. Food Stations Experiment

Background

The purpose of the food stations experiment is to expose students to the environmental impact of feeding the world. This experiment will engage students to understand the concept of food waste (Food waste is food that is thrown away because it is either undesirable or inedible) and Food desert (People living in a ‘food desert’ generally don’t have easy access to fresh, healthy, and affordable foods. Some parts of our cities don’t have grocery stores or farmer’s markets, and people must buy food from small convenience stores or fast-food restaurants—the only places to buy food in their neighborhood). Even though the attached activity focuses more on San Francisco, California, the students can use the knowledge gained to their local community.

The attached file is the Environmental Impact of Feeding the World Journal. Use this file to carry out the experiment.

<https://documentcloud.adobe.com/link/review?uri=urn:aaid:scds:US:3475bb1f-7383-4d76-a6a8-c89ec8cbe178>

Activity 2 outline

- Hand out the printed file to students
- Display two food stations in the classroom, these includes

- Food Waste Station – Students will be presented misshapen fruits/ vegetables, empty take-out containers, packaged food items with expired sell-by dates.
- Food Deserts Station: Display processed and packaged convenience store food items

Students Reflection:

After performing the station's activities. Students would be given 15-20 minutes to reflect on what the activities have taught them.

Follow-up Questions

1. Why do you think people don't like to eat produce that isn't perfectly shaped?
2. What can you as a student do to encourage people to embrace misshapen fruits and vegetables?
3. How do you think we can help people who live in food deserts have better access to fresh, healthy, and affordable foods?

Activity 3. Fast- Food Restaurants Map Identification

Background

Maps are really good ways to illustrate information about the world in a simple visual way. The attached map will show students the amount of fast- food restaurants and expenditure per capita of the restaurant. The activity is to point out to students the effect fast food has on their health and why it is important to reduce amount spent on fast food. According to an article by Natalie Butler, R.D, L.D, on healthline.com <https://www.healthline.com/health/fast-food-effects-on-body>, it is said that fast food causes numerous health problems. Also, this activity will help students better budget their finances for the most important aspect of their lives, such as books, saving up for college, buying a car, or going on an educational adventure. The Food Institute analysed data from the Bureau of Labor statistics, highlighted that millennials spend 45 percent of their budget on eating out, while the average American Family spends half their food budget on restaurant food.

Activity

Students will use an attached atlas to identify their areas and discuss their findings.

<https://www.ers.usda.gov/data-products/food-environment-atlas/go-to-the-atlas/>

Follow-up Questions

- Identify 3 states of your choice and provide the expenditure per capita and numbers of restaurants for the years provided.

Note: All links provided will be displayed on the class monitor, students are only allowed to use their phones when asked by the facilitators. Also all printer materials will be given to the students, and they are only supposed to bring their writing materials, even though some will be provided at the lesson.

Formative Assessment Process

Please estimate your level of ability by circling one of the following using a scale of 1-5, with 1 being poor and 5 being excellent. Note that you are asked to consider your estimate **before** the session and **after** the session.

Before This Session Poor Excellent	<i>My level of ability in the following:</i>	After This Session Poor Excellent
1 2 3 4 5 1 2 3 4 5	1) I understand the concept of food resiliency	1 2 3 4 5 1 2 3 4 5
1 2 3 4 5	2) I know how to fix a good diet for myself and loved one?	1 2 3 4 5
1 2 3 4 5	3) I am more conscious of the food I take because I understand its impact on my health.	1 2 3 4 5
1 2 3 4 5	4) I understand what the government does in regard food resiliency.	1 2 3 4 5

Session 7:

Social Perspectives on AgriTech and Controlled Environment Agriculture Technological Farming Techniques

Session one provides students with a background into the essential industry of agriculture and the subset of Agritech and Technological Farming Techniques. Agriculture is a massive economic driver in the United States, and particularly in Kentucky where it is a \$46.3 billion industry that employs over 260,000. Agriculturalists produce, process, and manufacture food, fuel, and fiber products that impact us each and every day. This session will provide students with a background into the essential industry of Agritech and Technological Farming Techniques.

Upon completion of this lesson, students should have an established understanding of the agricultural industry and the impacts it has on society.

Objectives

At the end of this unit, participants should be able to:

- Outline the process of local farming techniques
- Identify ways in which their daily lives and the food they acquire are impacted by the techniques they used to farm the products.
- Compare the cultural differences of different farming techniques used in the U.S compared to other areas of the world.

Student Evaluations

All student evaluations will be conducted in the form of a reflective self-assessment at the conclusion of each session. The evaluation for session one can be found on page 34. After the session has been completed, students will rank their abilities on certain topics, before and after the session, on a Likert scale.

Materials and Resources

Materials and resources for each activity are presented in detail in the activity description. Overall, facilitators will need flipcharts, markers, laptops or computers for students (could be substituted for students' cell phones), and the provided content.

Activity One: Lecture on Agritech and Controlled Environmental Agriculture Technological Farming Techniques

Activity Two: Discussion on the Impacts of Agritech and Farming Techniques

Activity Three: Local Farming Techniques

Activity One: Lecture on Agritech and Controlled Environmental Agriculture Technological Farming Techniques

Background

Agriculture is an often overlooked industry, but one that provides us with the food, fuel, and fiber we need to survive each and every day. While there are over 2 million farms in the United States, many of these farms need up to date farming technologies to help them improve their products. This activity focuses on the basics of agritech and farming techniques to introduce students to the topic as they complete this program focusing on the societal impacts of agriculture.

Activity

- **Utilize the provided powerpoint found in Appendix C** to guide students through a lecture and discussion focusing on agritech and farming techniques. This activity begins with a five-minute group discussion where students will be shown a youtube video then will be asked to be broken into small groups and will be asked questions based on the video. /photo of an agritech item (i.e. irrigation system), and are asked to identify how this piece of agritech is benefiting the farm. Students will then gather back together and each group will be asked to give their answer for each question.

Activity 2: Discussion on the Impacts of Agritech and Farming Techniques

Background

Farming has been around for a very long time and with time farming starts to progress, there have been many new technologies and techniques created to improve and create a more efficient way to farm. Americans and many other people around the world have learned and adapted to new techniques that help them out immensely. This activity encourages group discussion on the many ways in which agritech and farming techniques make a difference in our lives each and every day.

Facilitator Notes

- Students should be split into groups based on class size, but ideally no more than four to five students
- Groups will be given a flipchart sheet/whiteboard and markers on which to write their lists. Encourage creativity in the way that the lists are created and presented (i.e. drawings or things to be more interesting than just a bulleted list). Students should be given five minutes to complete this portion of the activity.
- The next five minutes of the activity will allow students to share their findings and identify similarities and differences between what their group identified and what others identified as well.

Activity

- Following the same powerpoint, facilitators should guide students through a more in depth discussion of agritech and new farming techniques and the ways in which these technologies and techniques are prominent in Kentucky. Students will then be split up

into groups to brainstorm ways in how agritech and farming techniques have an impact on industry. Each group will list these ways on a flip chart and present to the class.

Discussion Questions

- What were some of the first things that came to mind when you thought of agritech and Agriculture Technological Farming Techniques ?
- What did your classmates bring up that you were most intrigued by?
- How were your views on agritech and farming techniques different from your groupmates?
 - Why do you think that your beliefs were different from those around you?
- In what ways does agritech and farming techniques have a strong impact on your local community?

Activity 3: Local Farming Techniques

Background

Farming techniques help guide the farmer to grow and produce their crops in a certain way that is most efficient and productive. Many farming techniques can be easily adopted and can be easy to learn how to do, these techniques allow farmers to grow crops in ways that are safe for the environment and their importers. Many new techniques and technologies are being discovered everyday and are currently changing the pathway for future agritech and farming farming techniques. With this activity, students will be exposed to how agritech and farming techniques are used locally and non-locally. They will also be made aware of possible new technologies and techniques in their area.

Activity

As a group students will find two pictures, one of how arigitech and or farming techniques are used in the U.S., and the other will be how areas outside the U.S. use agritech and or farming techniques. The students will research and find a picture that they find interesting or pleasing and present them to the class as a group and explain why they picked the picture, what the picture is trying to define, what are the differences, and why they think the two locations use aritech and or farming techniques differently.

Facilitator Notes

- Example pictures
 - <https://susafrika.com/2020/12/16/daily-briefing-sa-agritech-startup-aerobotics-raises-us16m-in-series-b-funding-round/>

- <https://agfundernews.com/the-8-fs-of-indian-agritech-investing.html>



Discussion Questions

- What pictures did you select?
- What were your thoughts about the pictures you selected?
- Is it obvious that each area uses these technologies or techniques differently?
- Have you ever seen these technologies or techniques used on a farm in person?
- What would be a technique you would use if you were to start your own farm?
- What is your earliest childhood memory of a farm?
- Do you think farming brings people together?
- In your opinion, is farming important for quality well being?
- What is something you learned about agritech or farming techniques from looking for pictures?

Formative Assessment Process

*Please estimate your level of ability by circling one of the following using a scale of 1-5, with 1 being poor and 5 being excellent. Note that you are asked to consider your estimate **before** the session and **after** the session.*

Before This Session Poor Excellent	<i>I feel confident in my ability to...</i>	After This Session Poor Excellent
1 2 3 4 5	1) identify impacts of agriculture on human's daily lives	1 2 3 4 5
1 2 3 4 5	2) Display an awareness of the benefits of various farming techniques	1 2 3 4 5
1 2 3 4 5	3) comprehend various controlled agriculture farming techniques	1 2 3 4 5
1 2 3 4 5	4) Identify local farming techniques within my community	1 2 3 4 5

Session 8:

Farming As a Business

Session one provides students with a background into the essential industry of agriculture and the subset of Farming As a Business. Agriculture is a massive economic driver in the United States, and particularly in Kentucky where it is a \$46.3 billion industry that employs over 260,000. Agriculturalists produce, process, and manufacture food, fuel, and fiber products that impact us each and every day. This session will provide students with a background into the essential industry of Farming As a Business.

Upon completion of this lesson, students should have an established understanding of the agricultural industry and the impacts it has on society.

Objectives

At the end of this unit, participants should be able to:

- Discuss the business side of Agriculture and the capital that lies inside of that realm.
- Describe the business side of farming and how this market is benefitting and affecting our nation.
- Compare and contrast farming in the U.S. to other areas of the world and identify hardship and challenges that face agri-businesses

Student Evaluations

All student evaluations will be conducted in the form of a reflective self-assessment at the conclusion of each session. The evaluation for session one can be found on page 38. After the session has been completed, students will rank their abilities on certain topics, before and after the session, on a Likert scale.

Materials and Resources

Materials and resources for each activity are presented in detail in the activity description. Overall, facilitators will need flipcharts, markers, laptops or computers for students (could be substituted for students' cell phones), and the provided content.

Activity One: Lecture on Farming as a business and the business side of Agriculture

Activity Two: Discussion on the Impacts of the business side of farming

Activity Three: Compare and Contrast farming in the U.S. compared to other areas of the World.

Activity One: Lecture on Farming as a business and the business side of Agriculture

Background

Agriculture is an often overlooked industry, but one that provides us with the food, fuel, and fiber we need to survive each and every day. While there are over 2 million farms in the United States, many of them might not be seeing the profit that they assumed they would be making. This activity focuses on the basics of farming as a business to introduce students to the topic as they complete this program focusing on the societal impacts of agriculture.

Activity

- **Utilize the provided powerpoint found in Appendix D** to guide students through a lecture and discussion focusing on agriculture. This activity begins with a five-minute group discussion where students will be shown a photo of a finished food item (i.e. hamburger patty), and are asked to identify the different steps of the food production process. Students will then be shown a photo and video clip that provides the correct process that food takes from farm to fork.

Activity 2: Discussion on the Impacts of the business side of farming

Background

Even in heavily agricultural areas, there is often still a disconnect between farmers and others in the community. Farming has become almost an abstract concept to many Americans, and the impacts of agriculture are not always recognized. This activity encourages group discussion on the many ways in which farming and agriculture makes a difference in our lives each and every day.

Facilitator Notes

- Students should be split into groups based on class size, but ideally no more than four to five students
- Groups will be given a flipchart sheet/whiteboard and markers on which to write their lists. Encourage creativity in the way that the lists are created and presented (i.e. drawings or things to be more interesting than just a bulleted list). Students should be given five minutes to complete this portion of the activity.
- The next five minutes of the activity will allow students to share their findings and identify similarities and differences between what their group identified and what others identified as well.
-

Activity

- Following the same powerpoint, facilitators should guide students through a more in depth discussion of farming as a business and the ways in which this business is prominent in Kentucky. Students will then be split up into groups to brainstorm ways in which farming has an impact on their lives. Each group will list these ways on a flip chart and present to the class.

Discussion Questions

- What were some of the first things that came to mind when you thought of farming as a business?
- What did your classmates bring up that you were most intrigued by?
- How did you view the business side of farming differently than your groupmates?
 - Why do you think that your beliefs were different from those around you?
- In what ways does farming have a strong impact on your local community?

Activity 3: Compare and Contrast farming in the U.S. compared to other areas of the World.

Background

Many areas around the US and Kentucky have adopted many of the same farming techniques and these techniques help their business thrive and prosper within reason. Obviously the way many farmers in the U.S. do it are able to make a good profit from producing and selling their products to local or non local markets or businesses. Other areas of the world tend to have their farming business set up more differently than ours when realistically they are doing the same thing just in a different way due to weather conditions and different environments. With this activity, students will be exposed to different sides of the farming business in a communal setting. They will also be made aware of possible new farming businesses in their area.

Activity

As a group students will pick an area in the U.S. and an area outside of the U.S. to compare and contrast how different the farming business is in each area of the world. Students will be able to use laptops and or phones to research freely which area they want to focus on and how that area operates its farming business. Completing the activity then each group will have a chance to present what they have found and came up with to the rest of the class, followed by questions to the group after the presentation.

Facilitator Notes

- Relate back to the powerpoint for examples
- The group should be asked no more than 3 questions from the class at the end of their presentation

Discussion Questions

- What did you learn and what did you enjoy about it?
- Are more aware of the business side of farming?
- What were your thoughts on the examples you selected?
- Have you ever been to a farmers market?
- Do you have access to a farmers market?
- What is your earliest childhood memory of visiting or seeing a farmers market?
- Do you think farming brings people together?
- In your opinion, is the farming business important?
- What is something you learned about the business side of farming that you learned from your presentation?

Formative Assessment Process

*Please estimate your level of ability by circling one of the following using a scale of 1-5, with 1 being poor and 5 being excellent. Note that you are asked to consider your estimate **before** the session and **after** the session.*

Before This Session Poor Excellent	<i>I feel confident in my ability to...</i>	After This Session Poor Excellent
1 2 3 4 5	1. Display comprehension of the various stages of farming as a business	1 2 3 4 5
1 2 3 4 5	2. Identify impacts of agricultural markets on human's daily lives	1 2 3 4 5
1 2 3 4 5	3) Display an awareness of the impacts of farming as a business in different cultures	1 2 3 4 5
1 2 3 4 5	4) Identify local farming businesses within their community	1 2 3 4 5

Session Nine:

Public Speaking and Presentation Preparation

Session one provides students with a background into the essential industry of agriculture and the subset of food systems. Agriculture is a massive economic driver in the United States, and particularly in Kentucky where it is a \$46.3 billion industry that employs over 260,000. Agriculturalists produce, process, and manufacture food, fuel, and fiber products that impact us each and every day. This session will provide students with a background into the essential industry of agriculture, with a focus on food systems in particular.

Upon completion of this lesson, students should display proper public speaking and presentation skills including content development, tone, pace, body language, and more.

Objectives

At the end of this unit, participants should be able to:

- Identify important attributes of a speech or presentation, including the content and presentation style through famous speeches.
- Apply concepts learned throughout the course in the form of a Pecha Kucha or Lightning Talk.

Student Evaluations

All student evaluations will be conducted in the form of a reflective self-assessment at the conclusion of each session. The evaluation for session one can be found on page 41. After the session has been completed, students will rank their abilities on certain topics, before and after the session, on a Likert scale.

Materials and Resources

Materials and resources for each activity are presented in detail in the activity description. Overall, facilitators will just need the provided content and a laptop for each group.

Activity One: Lecture on Attributes of Quality Public Speakers

Activity Two: Developing and Presenting a Lightning Talk

Activity One: Lecture on Attributes of Quality Public Speakers

Background

Students will identify characteristics of quality speeches and public speakers to prepare for writing and presenting their own speech. Giving speeches is about more than just information, but telling a story and communicating the message of what you are speaking about. In the case of agriculture, developing quality communication methods is vital as the industry works to connect on a deeper level with consumers.

Activity

- Utilize the provided links to show an example of a quality speech, a poorly presented speech, and then a TEDtalk that relates back to the content. Using the discussion questions below, guide the students through reflection on the speeches and discussion on the qualities of good public speakers, from content to composure and body language.

Discussion Questions

- What qualities stood out to you from each speech?
 - o Why did these stand out, and what impact did they have on your classification of this as a good or a bad speech?
- Let's get three or more examples of quality content from the speeches (looking for statistics, quotes, something that is catchy)
- Let's get three or more examples of body language that helped these speakers convey their message.
- Which of the speeches was the most effective or impactful? The least?

Activity Two: Developing and Presenting a Lightning Talk

A lightning talk is a swift way to give an informative speech. Lightning talks follow a standard format that encourages short, engaging presentations that focus on the key points of your research. Each talk consists of 20 slides that auto advance every 15 seconds, for a total of five minutes.

When preparing and practicing your presentation, you will want to set the automatic advance feature in PowerPoint to advance your slides every 15 seconds. To do so, follow these instructions:

- From the "normal" view of your ppt file, click on the "transitions" tab
- To the right along the Transitions ToolBar, you will find a section called "Timing" and a setting "Advance slides." Highlight all of your slide thumbnails in the bar along the left of your screen.
- Then go back to the Advance Slides setting and add a checkmark to the box next to the word "After" and enter "00:15.00"
- This should set your deck to advance the slide automatically every 15 seconds once in the Slide Show mode.
- **Do test the timing of the automatic advance. Some computers advance quicker or slower than the programmed time, so it is best to time each transition and adjust settings if necessary.**

Examples of Lightning Talks

- [“Why and How to Give an Ignite Talk”](#)
- [“From Zero to Muso in 5 Minutes”](#)
- [“Getting Past Hello...How to Talk to Anyone”](#)


The Lightning Talk rubric can be found in Appendix E.

Formative Assessment Process


*Please estimate your level of ability by circling one of the following using a scale of 1-5, with 1 being poor and 5 being excellent. Note that you are asked to consider your estimate **before** the session and **after** the session.*

Before This Session					<i>I feel confident in my ability to...</i>	After This Session				
Poor				Excellent		Poor				Excellent
1	2	3	4	5	1) Write and present a speech	1	2	3	4	5
1	2	3	4	5	2) Display proper body language and other attributes of a successful public speaker	1	2	3	4	5
1	2	3	4	5	3) Apply the topics learned to a presentation	1	2	3	4	5
1	2	3	4	5	4) Develop a Pecha Kucha with members of a group	1	2	3	4	5

**Appendix A:
PowerPoint Presentation for Session One – Introduction to Agriculture and Food Systems**



**Introduction to Agriculture
and Food Systems**

AgriTech In Society: Social Implications for the 21st Century Educational Program, Session One



Agriculture - an Art and a Science

The science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products.

Agriculture produces food we eat, fiber that is used to clothe us, and fuels that power our daily lives.


From Farm to Fork

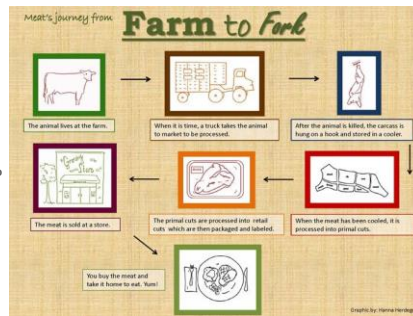
Can you list the steps it takes for this beef hamburger patty to make it from the farm to your pantry?



From Farm to Fork

For a hamburger patty to make it from the farm to your dinner table, it goes through a lengthy process. An animal is raised at one or more farms, taken to be processed, meat is packaged and sold at a store, and then you purchase and take it home.

[Youtube Link](#)



Food Systems


"The food system is a complex web of activities involving the production, processing, transport, and consumption. Issues concerning the food system include the governance and economics of food production, its sustainability, the degree to which we waste food, how food production affects the natural environment and the impact of food on individual and population health".

- The Oxford Martin Programme on the Future of Food, University of Oxford


What are some parts of the food system that sit within an hour radius from us right now? Farms, processing facilities, grocery stores?

Kentucky's Farmers - How do they impact me?

- What are some of Kentucky's most popular crops or livestock?
- What are some of the more uniquely Kentucky agricultural commodities?
- Thinking about what you have bought in the past week, what crops from Kentucky may have been involved?



Food and Fiber products fuel our lives, but how do they impact our culture?



Food and Fiber products fuel our lives, but how do they impact our culture?

Food culture refers to the practices, attitudes, and beliefs as well as the networks and institutions surrounding the production, distribution, and consumption of food. Our ethnicity and cultural heritage is often interwoven with the practice of eating, specific types of food, or events that incorporate food.

- Resources on food culture: [Culinary Traditions](#), [Food Culture](#)



Food Culture: Explored!


Pick a card that lists a specific culture, then work with your group to develop a short presentation (either with a flipchart sheet or a powerpoint slide) telling us about how your chosen culture incorporates food in their own unique ways.

Appendix B: PowerPoint Presentation for Session Four – Urbanization and Consumerism



Urbanization and Consumerism

AgriTech in Society: Social Implications for the 21st Century Educational Program, Session Four




Agriculture - Not Just Rural America

While rural America is typically where what we think of when we think of farms or agriculture. With an increase in food insecurity and food deserts, agriculture is becoming more prominent in urban areas and cities.

Urban agriculture has grown by more than *thirty percent* in the past thirty years in the United States. The group includes small community gardens up to 'Agri-Hoods', neighborhoods built around working farms, that all serve to meet the needs of their community.

[Detroit Agri-Hood Video \(start at 1:05\)](#)



Urban vs. Rural Agriculture

- The average US farm size in 2012 was 463 acres, while 60% of urban farms are under five acres total.
- Rural farms tend to focus more on commercialized crops - large herds of cattle or flocks of chickens, wheat or grain that spans hundreds of acres.
- Urban farms focus on produce and other products that are more usable by the average cook, and require less processing and production

Urban vs. Rural Agriculture

What are some common characteristics of urban farms, like this one seen in Detroit, Michigan?

How do these compare to your 'typical', 460 acre rural agricultural operation?



Consumerism

Consumerism is the protection or promotion of the interests of consumers, and is a big part of agriculture when it comes to what farmers are producing, how they are processing it, and where they are selling it. Like most industries, agriculture relies heavily on consumer demand and interest to determine what to grow and sell to the public.

Consumers drive agriculture, whether they are directly buying from farmer's at a farmer's market, or are buying more or less of a type of food at the grocery store. Either way, they are making an impact.

Consumerism

Take a minute to think about some of your own personal preferences. Do you prefer organically grown vegetables, or grass-fed beef? Are you a diehard dairy fan, or do you prefer almond or soy milk?

No matter your preferences, they have an impact on the way our food is produced from start to finish.

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Community Gardens

Community gardens and urban farming go hand in hand, but are not one in the same. Community gardens are not limited to just urban and heavily populated areas, they can be found anywhere that members of a community decide to make the most of a common space.



Community Gardens

Community gardens have a lot of the same characteristics as urban and rural farms, just on a much smaller scale. Similar crops can be grown, and need to be tended to just as a typical farm would be.

[Types of Community Gardens](#)



Creating a Community Garden

Now it's time to put our knowledge to the test. In your groups, you will be randomly assigned a community to design a community garden or urban farm for. When designing your project, consider community needs and interests, size, climate, and more.


Your final product should include - a sketch of the garden/farm layout, a list of 5 or more crops to be grown, a location and description of why you chose these characteristics.

Appendix D:
**Powerpoint Presentation for Session Eight: AgriTech and Controlled Environmental
Agriculture Technological Farming Techniques**



**AgriTech and Controlled Environmental
Agriculture Technological Farming
Techniques**

Social Perspectives on AgriTech and Controlled Environment Agriculture Technological Farming Techniques,
Session 7



Agriculture


The science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products.

Agriculture produces food we eat, fiber that is used to clothe us, and fuels that power our daily lives.




AgriTech (Agricultural Technologies)

- Agricultural technology or agrotechnology is the use of technology in agriculture, horticulture, and aquaculture with the aim of improving yield, efficiency, and profitability. Agricultural technology can be products, services or applications derived from agriculture that improve various input/output processes.



Kentucky's Farmers - How do they impact me?

- What are some of Kentucky's most popularly used agritech products?
- What are some of the more uniquely Kentucky agritech commodities?
- Think about all the examples of agritech that were provided, how might any of those products affect how farmers do their job?



Kentucky's Farmers - How do they impact me?

Kentucky is home to...

- Over 897,000 farms, with an average farm size of 444 acres
- Annual average of \$5 BILLION or more in cash receipts related to commodity production
- Farms that produce wheat, soybeans, corn, hogs, chickens, horses, cattle, and so much more.
- Over 160 farmer's markets with 2,700 vendors

Groups will develop a flip chart sheet with a list of how agritech impacts the industry.




Agritech and Farming Techniques fuel the farming business, but how do they impact the industry and community around them?

Appendix C:
PowerPoint Presentation for Session Seven – Farming as a Business



Farming as a Business


Farming As a Business, Session 8



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Farming

- Farming is the activity or business of growing crops and raising livestock.

Common Types of Farming or Farming Businesses

- Apiary (bee farm)
- Aquaculture (fish farm)
- Commercial Farm
- Cooperative Farm
- Dairy Farm
- Family Owned Farm
- Flower Farm
- Hay Farm
- Hobby Farm
- Orchard
- Poultry Farm
- Ranch



Kentucky's Farmers - How do they impact me?

- What are some of Kentucky's most popular farming businesses?
- What are some of the more uniquely Kentucky farming commodities?
- Think about all the examples of different types of farms and business, how do those affect the industry and the community around them?


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Groups will develop a flip chart sheet with a list of how farming as a business impacts the industry.

Farming As a Business is very important, but how does it impact the business and the community around them?



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Farming and the Farming Business refers to the practices, attitudes, and beliefs as well as the networks and institutions surrounding the production, distribution, and consumption of food.

Resources on Farming: [Benefits of Farm Work](#)



Farming As a Business: Explored!


Pick a card that lists a specific farming business, then work with your group to develop a short presentation (either with a flipchart sheet or a powerpoint slide) telling us about how your chosen farm business incorporates the business side in their own unique ways.

Appendix D:
**Powerpoint Presentation for Session Eight: AgriTech and Controlled Environmental
Agriculture Technological Farming Techniques**



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Groups will develop a flip chart sheet with a list of how agritech impacts the industry.



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**Appendix E:
Rubric for Lightning Talk**

	POOR (1 point)	FAIR (2 points)	GOOD (3 points)	EXCELLENT (4 points)
Organization	Audience cannot understand presentation, no sequence of information	Audience has difficulty following presentation, student jumps around	Student presents information in logical sequence which audience can follow	Student presents information in logical, interesting sequence which audience can follow
Subject Knowledge	Student does not grasp information; student cannot answer questions about the subject	Student is uncomfortable with information and is able to answer only rudimentary questions, but fails to elaborate	Student is at ease and answers most questions with explanations and some elaboration	Student demonstrates full knowledge (more than required) by answering all questions with explanations and elaboration
Appearance	Inappropriate dress for a presentation	Some aspects of appearance within personal control of the presenter could be improved	Neat, clean, appropriate attire for public speaking	Extra thought and effort given to appearance or dress
Eye Contact	Student makes no eye contact and only reads from notes	Student occasionally uses eye contact, but still reads mostly from notes	Student maintains eye contact most of the time but frequently returns to notes	Student maintains eye contact with audience, seldom uses notes
Verbal Techniques	Student mumbles, incorrectly pronounces terms, and speaks too quietly to hear	Student's voice is low, incorrectly pronounces terms, audience has difficulty hearing presentation	Student's voice is clear, pronounces words correctly, and most of the audience can hear presentation	Student uses a clear voice, correctly and precisely pronounces words, and all audience

				members can hear presentation
Total Score (circle one)	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Total Overall Score: _____