**Lesson 2: Sustainability:  Environment, Society and Economy**

**Problem Statement:**School lunches and food are a part of everyday life for high school students, something that is often taken for granted. Knowing the enormous amounts of energy that food production and service requires, how can the lunchroom be made more sustainable?

**Learning Objectives:**

Students will be able to

* Define sustainability, identify issues they believe are important for future generations
* Identify factors or issues that need to change in order to ensure a better future and explain how sustainability issues relate to the environment, society and the economy
* Determine what items make up the majority of our cafeteria’s trash
* Determine what can be done to minimize the impact to the environment
* Use a Pugh Chart to evaluate multiple solutions to determine the best one

**Materials:** PowerPoint, Pugh Chart Excel file, white boards

**Lesson Preparation:**Review PowerPoint file, Pugh Chart Excel file

**Time Required:** Two 50 minute periods

**Procedure:**

**Introduction:**

Define sustainability then describe links between economics, environment and society. What materials or practices do you want to pass down to your children? List student ideas on the board. What events or practices need to change to make the future more sustainable? How does this relate to making a more sustainable school lunch program?

Discuss definition of sustainability and Venn diagram

(Use Thwink.org/sustain/glossary/environmental sustainability.htm)

**Exploration:**

**Observations**

1. What are the sources of waste?
2. What makes up the majority of waste?
3. What in the garbage does the most harm to the environment?
4. Can packaging be improved or minimized?
5. Why might some food be thrown away?
6. What can be done to minimize how much food is thrown away?

**Current Cafeteria Practices**

1. What types of foods are served in the cafeteria?
2. Where do these foods come from?
3. How are these foods prepared?
4. What are the energy inputs and outputs of the process?
5. What materials are used and disposed of?

**Explain: What is a Pugh Chart**?

A Pugh chart is a simple design tool for weighin design ideas against your design criteria early in the design process.

1. List the design criteria in the left column.
2. Weigh each criterion according to how important it is.
3. List the possibilities across the top.
4. Score each possibility by multiplying the score by the weight.
5. Add the points for all possibilities to determine the best project.

**Sample Problem: What is the best way to get to Northgate Mall?**

Students will work in groups of 3 or 4 to create a criteria and criteria weights for the Northgate Mall scenario.

1. List the possible modes of transportation to Northgate.
2. What criteria would you use in choosing the best possible way to get to Northgate Mall? Make a list.
3. Given 100 points, assign points to each criteria based on its importance in making a good decision.
4. Discuss student point distribution.
5. Collect and average the points for each criteria to create a weight system for the Pugh Chart.
6. Use the point weights to evaluate the possible ways of getting to Northgate Mall.

**What criteria would you use to select a sustainable cafeteria solution?**

Students will work in groups of 3 or 4 to create a criteria and criteria weights for the Northgate Mall scenario.

1. List the possible criteria for selecting a sustainable cafeteria design. Write these criteria on the board.
2. Within your group, distribute 100 points to each criteria based on its importance.
3. Collect and average the points from each group to create the weights for each criteria.

These criteria and criteria weights will be used to evaluate your final project.

**Elaborate: Creating your proposal**

1. Write your possible projects across the top of the Pugh chart.
2. Score each possibility to determine your project topic. (Score -2 to 2 with 2 being the highest score)
3. Multiply the score by the class weight score.
4. Add down the point column to determine the final points for each possible project.
5. Write a research questions.
6. Define your criteria and constraints.

**Conclusion:**

Discuss the significance of the interconnectedness of sustainability issues and why it might be helpful to understand how and why these issues are interconnected, and how understanding the interconnectedness of sustainability issues can help us find solutions to the problems surrounding these issues.

**Homework assignment**: Watch the lunchroom, with the idea of identifying sustainability issues. Write your observations in your notebook.

**Assessment:**

 Formative – completion of group activity

 Summative – completion of homework assignment

**Accommodations:** Students with visual impairment will need assistance during the yarn ball exercise

**Extensions:** Find other sustainability definitions and compare them.  Create a class definition     

**References/Resources**: Venn diagram and definition of environmental sustainability:  Thwink.org, Poster