Sustainable vs. Non-sustainable Foods –Overview of Key Issues Lesson Plan

SUBJECTS: Technology and Enterprise, Maths

TIME: 4 sessions @ 50 minutes

GRADE LEVEL: Grades 9-10

PURPOSE:
The purpose of this lesson is to inform students of the differences between factory farming and sustainable farming while incorporating math computation techniques and the use of graphs.

BACKGROUND:
This lesson is designed to expose students to and to help them understand the complexity of the issues surrounding today's dominant form of agriculture that relies on synthetic fertilizers, chemical pesticides, artificial hormones, antibiotics, major transportation and considerable water use and more. Students will learn the key issues relating to sustainable and non-sustainable foods via through the DVD, interactive activity and web research. Additionally, students will try to identify how many people in society consume sustainable foods and to what extent.

OBJECTIVES:
Students will be able to
1) Explain the difference between sustainable foods and factory farm foods and how they are created.

2) Use appropriate vocabulary to describe and effectively discuss the benefits of, and potential risks of, sustainable and non-sustainable foods.

3) Discuss critically some of the issues that surround the food sustainability debate to include: safety, labelling, environment and the impact on family farms.

4) Represent data graphically.

PRE-ASSESSMENT:
Students have worked with resources and computers and are aware of how to conduct research to obtain credible information on a subject. Students are able to work collaboratively in groups.
Students are familiar with using PowerPoint to create presentations.
Students are familiar with Wordle.
Students commonly use e-portfolios to store work.

SET INDUCTION:
Explain to the students that this lesson is an introduction to the Sustainable Food Unit. Tell the students that in this lesson they will be viewing a video of "The Meatrix" as well as exploring the history of family farms. They will gather research on both topics with an emphasis on statistics and percentages. The purpose of their research is to create a

presentation explaining sustainable and non-sustainable foods for the new staff at Rockpool Bar & Grill staff, Burswood.

PROCEDURE:

Session One (50 minutes)

1). Open the lesson with the question, "What did you have for dinner last night?" Allow responses. Ask the students a series of questions such as: Where did the food come from?
Where did the store get the food?
Do they know the source of the food- was it produced locally or otherwise?

Many students might be largely unaware of how the food industry effects the environment, so it's good to continue the lesson by asking them that question. Here are the types of answers you should be looking for:

- Local vs international ingredients and green house gas emissions
- Farming methods — does the farming cause deforestation for example?
- Organic vs chemical fertilizer and pesticide usage
- Genetically modified vs non-GM crops
- How is the food packaged — is it wasteful?
- Disposing of food waste correctly — compost heaps, disposal of fats and oils, etc

These are some good topic areas to get started. Your students may also think of some others, such as cattle and atmospheric methane levels.

Asking this question will give you a good indication of how clueless/clued-up your students are.

2). Give an introduction to the mini movie "The Meatrix". Explain the correlation between the Meatrix and The Matrix. Have students tell what they remember about the movie "The Matrix", its characters, and general theme. Intro some of the characters in "The Meatrix" and parallel the likenesses.
3. View "The Meatrix": http://www.themeatrix.com
4. Allow students time to research factory and family farms by using The Meatrix Interactive 360 at: http://www.themeatrix.com/interactive .

3). Give out the brief for the presentation and discuss. Also notify the students that the brief is available online at www.sustainablefoods.weebly.com under the students page.

Session Two and Three (50 minutes each)

Following the movie and the interactive online activity, students should work in groups of 3-4. Have each group produce a PowerPoint presentation for the Rockpool Bar & Grill Restaurant staff focusing on the benefits of sustainable food and potential risks of non-sustainable foods to animals, farm workers, economy, consumers and the environment. The following aspects need to be included:

- Create a PowerPoint presentation (approximately 1000 words) with the restaurant staff as the target audience. **The aim is to select & analyse relevant information about sustainable food to educate staff. Neil Perry wants his staff to consider environmental factors when preparing/purchasing/working with food. Remember to keep this goal in mind when creating your presentation.**

- A section with commonly used vocabulary and the definition of terms relating to sustainable food.
- Use Wordle to create a "word cloud" and include your vocabulary from above. You may create one or two word clouds to include in the presentation (www.wordle.net).
- An introduction, body, summary and reference sections.
- A collection of ten facts and/or opinions and at least 3 statistics relating to both sustainable and non-sustainable food. Elaborate on these by discussing the advantages and disadvantages of each – consider safety, labeling, economy, environment and/or family farms.
- A list of useful resources that the staff may use to conduct further investigation (This may included a YouTube video, a website, an article, a podcast).
- At least two statistics/percentages about people in society and sustainable food. For example: How many people eat/purchase sustainable food on a regular basis
- How many people would not buy sustainable food due to cost? The main reason people don't consume sustainable food given by people is xxx, and this represents x percent of the population…etc.
- Include two graphically representations of data regarding sustainable and/or non-sustainable food (pie chart, bar graph or other). New facts or data or something you have revealed from the above investigation.
- Add the presentation to your e-portfolio.

Allow the students to have computer time to go and research the topic and find out as much information as they can. Direct the student to the "Resource Page" of www.sustainablefood.weebly.com.

Session Four (50 minutes)

Engage in a classroom discussion, asking students from each group to report on their findings/views until it is clear that all students understand the benefits and risks associated with non-sustainable foods and sustainable/organic foods. Keep students engaged until all view points have been explored and topics exhausted. This is very open ended.

EXTENSION ACTIVITIES:

Session Five (50 minutes)

Have each group of students create an online poll for families and friends regarding their consumption of non-sustainable vs sustainable foods to be used for the restaurant. You can use the poll questions below or preferably generate the questions as a class. Each group should poll 20-25 other people and tally results and present the findings graphically using their choice of software.

> Do you know what a sustainable food is?
> Have you consumed any sustainable foods in the past week? If so, how many (times)?
> Which of the following describes your typical weekly consumption of the following food categories: sustainable meat, non-sustainable meat, sustainable diary, non-sustainable diary, sustainable fruit and vegetables, non-sustainable fruit and vegetables. How often: once, more than once, not at all.
> Do you think the government should require foods to be labelled to show their source?   Would you be interested in dining in a sustainable food restaurant?

Once all surveys are completed (allow a week or two) discuss the results as a class. Have students record their reflections on the findings to the class blog under the Sustainable vs. Non-sustainable category.

There are no assumptions made that the students know how to create an online poll. You may wish use the interactive whiteboard (IWB) to demonstrate creating on using www.polldaddy.com or www.surveymonkey.com.   Also direct the students to the example survey created under the "Students" page.

Ask them to complete it and conduct a class discuss about the results obtained. Is the class aware of sustainable foods and how much on a footprint they are leaving behind?

Discuss ways to reduce the impact. What can they do this today to make a change for the better?

CLOSURE:
Allow students to add their presentations to their e-portfolios. Inform the students that this is only the beginning to what they will learn over the next few weeks while working on the Sustainable Food unit.

MATERIALS NEEDED:
- Computers with Internet access
- List of websites
- Graphical software (like excel)
- Access to online surveys (polldaddy.com or surveymonkey.com)
- Interactive Whiteboard (IWB)
- Meatrix DVD
- Meatrix Interactive activity
- PowerPoint software
- Wordle.net access
- E-portfolios.

EVALUATION:
1. As a group, student's PowerPoint presentation will be assessed for meeting the requirements set.

2. Students will be assessed on how well they worked as a group.
3. Blog entries will be reviewed for reflections and assessed to determine if they have understood the sustainable food topic and made given insightful reflections (formative assessment).

REFLECTION;
Reflect on own teaching and the success or otherwise of all lessons in this unit. Were the activities motivating? What went well? What could I improve on? Was the timing well planned? Was there enough scaffolding or do the students need to be taken back to basics with respect to some skills/areas?