CAMPUS AS A LIVING LAB LEARNING MODULE

MODULE TITLE: Food, Environmental Justice, and Integrated Waste Management

CAMPUS: De Anza College

MODULE BACKGROUND

The Campus as a Living Lab Project

San Jose State University, Foothill College and De Anza College have collaborated on a project to infuse sustainability throughout the curriculum at our institutions. This project, called the Campus as a Living Lab, is funded by the California State University Chancellor's Office. The Campus as a Living Lab program is focused on using physical sustainability features on our campuses to promote sustainability through hands-on learning activities. For our collaboration, each campus developed a series of one-session teaching modules (approximately 1-3 hours each) that faculty members can use to incorporate sustainability into their courses. Each module focuses on a physical feature at SJSU, De Anza or Foothill. All modules are designed to address specific GE area student learning objectives and provide students with an active learning experience.

General sustainability definition and principles

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs." (Bruntland 1987)
By definition, this requires citizens who wish to act sustainably to engage in actions that are ecologically sound, economically feasible, and socially responsible.

**Key Concepts**

- Sustainable multiple-use management of food resources, following food from production to consumption (i.e. resource use, zero waste vs. disposal).
- Environmental impacts of food production.
- How food production methods affect the nutritional content of food.
- Improvement of public health through good nutrition in healthy food options.
- Integrated waste management through proper packaging and disposal of food.
- Pollution prevention through integrated waste management practices, such as rejection, source reduction, reuse opportunities, and recycling methods.

These concepts all relate to the food system and integrated waste management. Today, we will focus on the food at the De Anza Dining Services as well as the packaging used and on-campus waste programs.

**Student Learning Outcomes**

This module relates to the following Student Learning Outcome associated with ES 2 Humans, the Environment, and Sustainability at De Anza College:

“Analyze and communicate the relationships between our health and the health of the environment in order to apply this information in a civic and community setting.”

**Materials Needed**

- Access to KC Food Garden and the Campus Cafeteria
- “Food and Integrated Waste Management Exploration” Document
- De Anza Campus Map: [https://www.deanza.edu/map/pdf/campusmap_3_5_14.pdf](https://www.deanza.edu/map/pdf/campusmap_3_5_14.pdf)
- “A Few Tips on How to Live Green!” document
**How Content Will Be Delivered**

This module will be conducted at the Kirsch Center for Environmental Studies, indoors, and outdoors at the food garden. Students will also visit the campus cafeteria. Together, time required will be 1 ½ hours. Online access is required and available through the computers inside the Kirsch Center for Environmental Studies.

**Accessing Site**

For this module students will go to the food garden of Kirsch Center for Environmental Studies and then to the De Anza campus cafeteria.

**Food garden:** the food garden is just west of the Cheeseman ESA. Parking is available at Lot C1 just south of the baseball field, or in Lot D just south of the football field. If coming from Lot D, head east and the food garden will be on the left just past the Kirsch Center, and along the fence. If coming from Lot C1, the food garden is visible if facing south, and the entrance gate is accessible to the right.

**Cafeteria:** the cafeteria is near the north entrance of De Anza College, upstairs in the Campus Center. Parking is available in Lot A and Lot B. From Lot A students will head west and pass the Multicultural Center (MCC) and the Advanced Technology Center (AT) to reach the Campus Center. From Lot B students will head west and pass the L-Quad buildings to reach the Campus Center.

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**Integral Theme - Environmental Justice**
**Environmental Justice “EJ”:** The pursuit of equal justice and equal protection under the law for all environmental statutes and regulations without discrimination based on race, ethnicity, and/or socioeconomic status. This concept applies to governmental actions at all levels -- local, state and federal -- as well as private industry activities.

**Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations**

(Signed by President Clinton on February 11, 1994)

The purpose of this order was to focus federal attention on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities. Federal agencies were directed to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law. Each agency was ordered to develop a strategy for implementing environmental justice as well as including environmental justice as part of its mission.

**Background Study (to be conducted before the module, up to 1 hour)**

Watch this video: Food Justice, A Growing Movement 5 min. 52 sec. - https://www.youtube.com/watch?v=zhO_auDPgZE
- Write one paragraph of what you have learned.

Ecological Footprint Quiz (5 minutes)
- Watch the Green Ninja Footprint Renovation, a 3-minute animated video created by SJSU students to teach about how to reduce your green footprint. https://www.youtube.com/watch?v=UeYOZgbgG1Q
- Go to http://www.myfootprint.org/
- Complete the quiz to find out your footprint, or how many Earths would be needed to support your living habits.
● When finished, print your results.
● Click the orange button, “Reduce your Footprint,” and read some strategies to reduce your personal global footprint
● Write a ½ -page paper summarizing what you have learned. Your paper should explain your results from the MyFootprint Quiz, including how many Earth’s would be required to sustain you and how that compares to the national average. Then, explain 5 lifestyle changes you could make to become more sustainable.

Have students check out online resources

● Food garden - photos [https://www.facebook.com/deanzagarden](https://www.facebook.com/deanzagarden)
● Campus Dining [https://www.deanza.edu/diningservices/index.html](https://www.deanza.edu/diningservices/index.html)

**Lesson**

**Lesson, Part 1 (25 minutes) - Introduction**

● Students will visit two locations on campus to learn about food and integrated waste management.
  ○ KCES Food Garden
  ○ De Anza Dining Services
● We will be considering the sustainability of these locations, and deciding what features make for a sustainable or unsustainable food system and waste management program.
● **Definition of Sustainability:** *Using nature as a model, sustainability means that no materials ever go to waste--everything is recycled; there is no waste in nature. Since energy is always lost from systems, only renewable and perpetual energy resources can be a sustainable basis for energy needs. For example, all food webs are based on solar energy captured by plants. Also, natural processes, such as species interactions, must sustain the system and provide ecosystem services.*
• We are going to apply sustainability to how we think of our food system and waste management.

• Introduction Video
  ○ Watch a 2-minute PBS clip about Community Supported Agriculture (CSAs) and how they benefit the food system
    https://www.youtube.com/watch?v=o_uZSCaUaQY&list=PLQMKh4LBO6xNO_r2IYhUMyfSZ2sUbV_1V
  ○ Watch 4-minute Veggielution Clip to learn about a local, San Jose based CSA program
    https://www.youtube.com/watch?v=MoALVRX6JnM

**Food**

Highlight food garden attributes that make the food healthy and sustainable
  ○ Healthy Soil = healthy plants = healthy people
  ○ “To Be Human is to be a Creature of the Soil” (Elena Wilken 1995)

**Organic Produce**

  ○ Simply stated, organic produce and other ingredients are grown without the use of pesticides, synthetic fertilizers, sewage sludge, genetically modified organisms, or ionizing radiation. Animals that produce meat, poultry, eggs, and dairy products do not take antibiotics or growth hormones.

  • The USDA National Organic Program (NOP) defines organic as follows:
    *Organic food is produced by farmers who emphasize the use of renewable resources and the conservation of soil and water to enhance environmental quality for future generations. Organic meat, poultry, eggs, and dairy products come from animals that are given no antibiotics or growth hormones. Organic food is produced without using most conventional pesticides; fertilizers made with synthetic ingredients or sewage sludge; bioengineering; or ionizing radiation. Before a product can be labeled "organic," a Government-approved certifier inspects the farm where the food is grown to make sure the farmer is following all the rules necessary to meet USDA organic standards.*
No Genetically Modified Organisms (GMO’s), GMO’s deplete soil

- **GMO**: Genetically modified organism. An organism whose genetic characteristics have been altered using the techniques of genetic engineering.

Plant-based foods are healthiest for your body

- The China Study by C. Campbell found that plant-based diets (vegan) have the potential to turn-off cancer genes, reverse heart disease, and decrease the risk of certain cancers

Plant-based foods are the most sustainable to produce

- The production of plant-based foods require fewer resources than the production of meat and dairy.
- A plant-based diet is significantly less land and energy intensive than a diet with a high proportion of meat, seafood, and dairy. A recent study found that a low-fat vegetarian diet needs 0.18 hectares per person per year while a high-fat diet with lots of meat needs 0.85 hectares because animals need so much more room. And because meat production drives deforestation and requires high inputs of energy for processing and transportation, it also comes with a high carbon footprint price tag. Globally, it has been estimated that up to 18% of all greenhouse gas emissions are associated with animal product consumption.

Local Food

- Two important variables affecting your food footprint are food miles (or miles to market) and the amount of processing and packaging. If your food comes from far away – such as out of season produce imported from across the world – it requires lots of energy for transportation and refrigeration. If it is highly processed and comes in copious paper packaging, it puts a strain on forests. Buying fresh local foods from farmers markets and other locally owned sources or natural foods markets reduces these impacts.

Growing your own food

- Transitioning from global to local food systems is one of the most important challenges in the era of peak oil, climate change, and growing
economic and political insecurity. Small scale food production at the local level relieves the enormous environmental impacts associated with industrial agriculture and is an essential source of nutrition for those in need. The Food Security Learning Center has found that community gardens – particularly those in underserved areas – address lack of access to fresh produce, making them a critical piece of a community's food security. One study estimates that home or community gardening can add $500 to $1200 worth of produce per year to a family's diet – a big difference for low-income families.

Highlight cafeteria attributes that contribute to healthy food options:

○ Healthy Choices
  ● Salad bar
  ● Portabella mushroom burger
  ● Vegetarian & chicken wraps

○ Organic produce from Agriculture and Land-Based Training Association (ALBA) CSA - on any given day, up to 70% of the salad bar may be organic

○ Won award for “Finest College or University Dining Services in the United States” in 2008.

**Integrated Waste Management**

**Pollution prevention** is reducing or eliminating waste at the source by modifying production processes, promoting the use of non-toxic or less-toxic substances, implementing conservation techniques, and reusing materials rather than putting them into the waste stream.

Examine general source reduction techniques employed for pollution prevention:

- reduced material use in product manufacture
- increased useful life of a product through durability and repairability
- decreased toxicity
- material reuse
- reduced/more efficient consumer use of materials
• increased production efficiency resulting in less production waste

Highlight food garden attributes that contribute to integrated waste management:

• Composting
• All organic - no chemical runoff

Highlight cafeteria practices that contribute to integrated waste management:

• Cook food to order instead of pre-cooking, reduces food waste
• Sustainable packaging of food
• Patrick Gannon, the Director of Dining Services, claims 100% Biodegradable utensils & containers
• Eco-Products provides disposable cups, utensils, plates, and bowls made with more sustainable practices (http://www.ecoproducts.com/)
• Utensils (from Eco-Products)
  • 70% renewable materials, not compostable
  • http://www.ecoproducts.com/plant_starch_cutlery.html
• “Bulk” sugar and other condiments at Cafe Rococo
• Recycling
• No Compost bin

Lesson, Part 2 (30 minutes) - Visit the KCES Garden

• Hand out the “KC Food and Integrated Waste Management Exploration” document
  • Questions 1 & 2 pertain to the KCES Garden
• During this lecture/tour, students will learn the following:
  • Components of healthy soil
  • Importance of choosing vegetables
  • Importance of connecting with the land

Lesson, Part 3 (30 minutes) - Visit the Dining Services on campus

• Hours of Operation
  • Monday - Thursday 7am - 2pm and 2:30pm - 8:30pm
○ Friday 7am - 2pm
○ Closed Saturday and Sunday

● Students will continue to fill out the “KC Food and Integrated Waste Management Exploration” document
  ○ Questions 3, 4, and 5 pertain to the Dining Services
● During this lecture/tour, students will learn the following:
  ○ Healthy food options
  ○ Local food sourcing
  ○ Sustainable food packaging and serving methods
  ○ Integrated waste management through recycling

Lesson, Part 4 (5 minutes) - Conclusion

● Recap Tours of Food Garden & Dining Services
● Ideas for improvement in the cafeteria
  ○ Brainstorm - Ask students, what they would like to see in the cafeteria?
    ■ Ideas for more sustainable efforts
● Closing Discussion
  ○ Why do we have the food garden? What can we learn from the food garden?
  ○ Students will share the connections they have made between growing food, healthy eating, and proper waste management (zero waste/compost/recycling)
  ○ Introduce Post-Module Activities:

Post-Module Activity (up to 2 hours)

Watch this video: Monsanto's Bt Cotton in India is Killing the Soil as Well as Farmers, Vandana Shiva 11 min. 45 sec. [https://www.youtube.com/watch?v=eGI8Bhz35Ei](https://www.youtube.com/watch?v=eGI8Bhz35Ei)

● Write a ½ page summary of what you have learned
Watch this video: GMO Documentary: Genetic Roulette (17-minute trailer), 16 min. 53 sec. [https://www.youtube.com/watch?v=hAMLlir8oprw](https://www.youtube.com/watch?v=hAMLlir8oprw)

- Write one page summarizing the video. Include health effects, how GMO's are made, how GMO's function, and what you have learned about the FDA.

**How to Apply This Module to Your Daily Life**

Refer to the “A Few Tips on How to Live Green!” document

**Are You Willing to Take the Pledge?**

*I pledge allegiance to the Earth, and to the flora, fauna, and human life that it supports, one planet, indivisible, with safe air, water and soil, economic justice, equal rights and peace for all.*

-Women’s Environment and Development Organization

**Online Resources**


De Anza Virtual Tour: [http://www.deanza.edu/vtour/map/](http://www.deanza.edu/vtour/map/)


The Quest for Environmental Justice - Human Rights: [https://www.youtube.com/watch?v=SYVvbs6XsNw](https://www.youtube.com/watch?v=SYVvbs6XsNw)

De Anza Dining Services: [https://www.deanza.edu/diningservices/index.html](https://www.deanza.edu/diningservices/index.html)


Recycling at De Anza: [http://www.deanza.edu/sustainability/recycle.html](http://www.deanza.edu/sustainability/recycle.html)


The Lexicon of Sustainability, Know your Food: Short Film Series: [http://www.lexiconofsustainability.com/](http://www.lexiconofsustainability.com/)
Food and Integrated Waste Management Exploration (Instructor's Key)

1. **Go to the food garden outside the Kirsch Center for Environmental Studies (KCES):** Describe the soil. What attributes about the soil do you notice (density, color, moisture content)? Is the soil healthy? How do you know?

   ➔ **Attributes of soil**
   ◆ Density - The three classifications of soil are clay, sand, and loam. To determine the density of your soil, take a handful of damp soil from the garden and give it a firm squeeze. Then, open your hand and watch what happens. Clay holds its shape really well in your hands and is nutrient-rich but slow to drain. Sand will fall apart in your hands. Sand drains quickly but lacks nutrients. If you have loam, the soil will hold its shape in your hand but crumble with a light poke. Loam is the ideal soil type for growing vegetables because it retains moisture and nutrients and also drains properly.
   ◆ Color - ideal soil will be dark brown and full of organic matter
   ◆ Moisture content - Ideal soil moisture is damp but with proper drainage

   ➔ **Indicators of healthy soil**
   ◆ Loam
   ◆ Presence of worms

2. **What kinds of food is being grown?** Are the vegetables seasonal?

   ➔ Answers will vary depending on the season. For example, in spring 2014 the garden has
   ......

   ➔ For more information on seasonal vegetables grow in the KCES garden, contact Diana Martinez. martinezdianna@deanza.edu (408) 864-5446 Office: KC 220

3. **Go to the Campus Cafeteria:** Do you see any healthy food choices? What about outside of the salad bar?

   ➔ Healthy food choices: salad bar
   ➔ Outside the salad bar: portobello mushroom burger, vegetarian wraps, chicken wraps

4. **Where does the food come from?** Where does the produce in the salad bar come from? Is the food organic?

   ➔ Some of the produce in the salad bar is organic and comes from ALBA Organics, a CSA.
   ◆ more information about ALBA can be found at www.albafamers.org
   ➔ For more information about dining food sources, contact Patrick Gannon, Director of Dining Services. gannonpatrick@deanza.edu

5. **How is the food packaged?** Do we have environmentally friendly to-go packaging?
Food packaging & utensils are made by Eco-Products

- Made of partially renewable materials
- Utensils are 70% from renewable materials, not compostable
- Check out [www.ecoproducts.com](http://www.ecoproducts.com) for more details on the sustainability of dining services packaging

Coffee shop uses metal spoons for stirring instead of wooden stir sticks and a jar of sugar instead of individually servings of packaged sugar to prevent waste.

For more information about dining packaging, contact Patrick Gannon, Director of Dining Services. gannonpatrick@deanza.edu

6. **Explain what happens to the food waste from the cafeteria.** Is there composting available? Are there any opportunities for the campus dining waste management to be more sustainable?

- Waste options in the cafeteria include Trash & Recycling bins, no compost
- The Kirsch Center for Environmental Studies has a small compost bin in the public kitchen
- Yes, there are opportunities for campus dining waste management and pollution prevention to be more sustainable. The packaging and utensils chosen use partially renewable sources, but are not actually biodegradable. Dining Services could use biodegradable food packaging and provide students with the option to compost their waste in order to reduce trash created. Compost bins provided at dining services would allow students to compost food waste such as banana peels and extra food. Also, composting would reduce food waste created in kitchen prep.
# A Few Tips on How to Live Green!

## Institutional (On-Campus Efforts)
- **Educational**
  - Learn about sustainability – take Environmental Studies (E.S.) classes! Many of them also fulfill GE (General Education) requirements.
  - Help make sustainability/E.S. a General Education requirement for all De Anza students.
- **Get Involved**
  - Participate in committees and clubs around campus.
  - Put on a lecture or movie night, or host an event on climate change.
- **Living Democracy**
  - Problem-solving in your everyday life at school, and elsewhere. (i.e. vote with $!)
  - Be inclusive of all peoples, and work to understand those with different backgrounds or views.
- **Policy & Implementation**
  - Work toward effectively implementing our Sustainability Management Plan (SMP) and our other sustainability efforts.
  - Advocate for improved public transit access between underserved neighborhoods and the De Anza campus.
  - Campaign for more organic, sustainable food choices on campus.
  - Voice your support in our college’s effort toward more green buildings.

## Societal (Spreading Sustainability)
- **Policy & Government**
  - Get involved in political and social environmental issues. Write letters, faxes, e-mail, phone your legislators and government officials.
  - Meet with representatives to discuss climate change solutions.
- **Community**
  - Attend city council and board meetings.
  - Educate friends and neighbors about environmental issues.
  - Write to your newspaper in support of climate change solutions.
  - Work on local climate change ordinances and resolutions.
- **Non-Profit**
  - Give your wealth, wisdom, and work to a non-profit organization.
  - Help preserve natural spaces.
- **Business**
  - Advocate for sustainable purchasing practices, including Energy Star products.
  - Promote and implement climate change solutions in your workplace.
  - Green your business or workplace by minimizing hazardous chemical use and e-waste.

## Individual (It All Starts With YOU!)
- **Energy Use**
  - Efficiency/Renewable – use CFL lightbulbs or go solar!
  - Conservation – turn off all electronics when not in use.
- **Food**
  - Join a CSA (Community Supported Agriculture) project to support local farmers and get tasty, sustainably-grown food! [www.localharvest.org](http://www.localharvest.org).
  - Support REAL FOOD – purchase items that are local, seasonal, and sustainable, or grow your own food at home!
  - “Eat food, not too much, mostly plants” - Michael Pollan
- **Transportation**
  - Get exercise while you commute - walk, bike, skateboard, and have fun!
  - Carpool, car share, or use the bus, train, BART, or light rail.
- **Consumption/Waste**
  - 4R’s - Reject, Reuse, Reduce, Recycle (and Compost, too!)
  - Consume less - Shop smarter, avoid extra packaging.
  - Buy from ethical retailers – [http://www.fairtradeusa.org](http://www.fairtradeusa.org)
- **Water**
  - Avoid bottled water – invest in a reusable bottle.
  - Turn off water while you brush your teeth.

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"Make the world a cooler place!"