



PNW BOCES  
**Center for  
 Environmental  
 Education**



# Education for Sustainability

Classroom-based programs and assemblies that take place at your school.  
*Program descriptions can be found on the following pages.*

PROGRAMS	EfS Standards
<i>Biography of a Tomato: A Systems Fable</i>	<i>Responsible Citizenship, Healthy Commons, Sustainable Economics</i>
<i>Biomimicry Introduction: The Science of Today and Jobs of Tomorrow</i>	<i>Responsible Citizenship, Healthy Commons, Sustainable Economics, Systems, Natural Laws</i>
<i>Biomimicry Design Challenge</i>	<i>Responsible Citizenship, Healthy Commons, Sustainable Economics, Systems, Natural Laws</i>
<i>Climate Change</i>	<i>Responsible Citizenship, Healthy Commons, Systems, Natural Laws</i>
<i>Composting: Nature's Recyclers and Decomposers</i>	<i>Responsible Citizenship, Healthy Commons, Systems, Natural Laws</i>
<i>If the World Were a Village: Multiple Perspectives</i>	<i>Responsible Citizenship, Healthy Commons, Systems, Multiple Perspectives</i>
<i>I'm Only One Person, What Can I Do? (Class or assembly)</i>	<i>Responsible Citizenship, Natural Laws, Inventing/Affecting the Future</i>
<i>Introduction to Sustainability</i>	<i>Responsible Citizenship, Systems, Sustainable Economics, Natural Laws, Inventing/Affecting the Future</i>
<i>No Trash Lunch</i>	<i>Responsible Citizenship, Healthy Commons</i>
<i>Recycling: What Happens to My Recyclables?</i>	<i>Responsible Citizenship, Systems, Sustainable Economics, Natural Laws, Inventing/Affecting the Future</i>
<i>The Extraordinary Journey of Ordinary Stuff</i>	<i>Responsible Citizenship, Systems, Healthy Commons, Natural Laws</i>
<i>The Secret Life of Your Hamburger &amp; Other Favorite Teenage Foods</i>	<i>Responsible Citizenship, Healthy Commons, Systems</i>
<i>Understanding the Commons</i>	<i>Responsible Citizenship, Healthy Commons</i>
<i>What's Your Footprint?</i>	<i>Responsible Citizenship, Healthy Commons, Systems, Sustainable Economics, Natural Laws, Inventing/Affecting the Future</i>
<i>Where Does My Garbage Go?</i>	<i>Responsible Citizenship, Healthy Commons, Systems, Sustainable Economics, Natural Laws, Inventing/Affecting the Future</i>

**FOR MORE INFORMATION:**

Call Catherine Leist 845.225.9256 or email: [ceeschedule@pnwboces.org](mailto:ceeschedule@pnwboces.org)

**TO BOOK A PROGRAM:**

1. Complete & submit on-line request form found at: <http://portal.pnwboces.org/cee/>.
2. Scheduling takes place in late July.
3. In late August, you will receive a program confirmation letter.

## **BIOGRAPHY OF A TOMATO: A LESSON IN SYSTEMS THINKING SCI 21 ALIVE**

**Location:** School

**Presentation Style:** Individual Class Visits

**Instructional Resources:** PP Presentation

This program presents two systems fables: the narrative of a typical North American tomato and one of a locally grown New York tomato. Both fables are told using a PowerPoint and follow the tomato from the development of the seed and its parts, planting and growth, needs, extraction from nature and different routes each will take to end up on our tables. Students will then use the information from the fables to compare the energy, resources and ecosystem interactions that went into the development and growth of each tomato. Student will be asked to assess both positive and negative outputs to help them better understand the implications of how and where we get our food. **Assembly Model Not Available - 1-2 classes/1 hour**

## **BIOMIMICRY INTRODUCTION: THE SCIENCE OF TODAY AND JOBS OF TOMORROW SCI 21 ALIVE**

**Location:** School

**Presentation Style:** Individual Class Visits

**Instructional Resources:** PP presentation, biomimicry products, matching activity

What is the connection between a \$100 bill and a beetle or a moth eye and a cell phone screen? These are examples of a rapidly growing discipline called Biomimicry which studies nature's best ideas and then imitates these designs and processes to solve human challenges. This program will use PowerPoint and actual bio-inspired products to help students better understand nature as a source of ideas and the concept of bio-inspired design. Student will participate in an exercise that asks them to match organisms with bio-inspired products. This will be followed by a discussion of why the organism was used. **This program can be done as a 1-hour assembly for a full grade level or done as in-class program for individual classes throughout the day.**

## **BIOMIMICRY DESIGN CHALLENGE**

**Location:** School

**Presentation Style:** Individual Class Visits

**Instructional Resources:** PP presentation, biomimicry products, design challenge cards

**This program is a follow up to the Introduction to Biomimicry program which is prerequisite.** After a brief review of biomimicry, students are introduced to the two approaches to biomimicry design using actual design examples: biology to challenge and challenge to biology. We explore the difference between bio-inspired and biomimicry by examining the earth operating principles vs the human operating principles. From that we will extrapolate a set of sustainable guide lines that student will use in the evaluation part of their design process. Finally, students are given a design challenge around water. To support their work, they will be given a set of organism cards, and a walk through of AskNature.org. This challenge is taken over by the teacher as a follow up to this program. One suggestion is to have a bio-inspired design challenge within the school.

## **CLIMATE CHANGE**

**Location:** School **Presentation Style:** Individual Class Visits

**Instructional Resources:** PP Presentation, live animal ambassador, preserved animals and specimens

Students will be introduced to the main scientific principles of global warming/climate change the causes of this transformations to our planet. By incorporating what we already know about good "green" practices and using new information, students will problem solve ways to help slow down the impacts of global climate change. Students will also learn about animals and plants which are at risk of extinction due to climate change, while also learning about some very interesting animals which actually help to slow down the production of greenhouse gases! Examples will be shown of the many places on Earth which climate change has already had an impact. This class will incorporate live animals and artifacts to support the presentation. **Can be done as an assembly.**

## **COMPOSTING: NATURE'S RECYCLERS AND DECOMPOSERS SCI 21 ALIVE**

**Location:** School **Presentation Style:** Assembly/Individual Class Visits

**Instructional Resources:** PP Presentation, live animal ambassadors, hands-on activities

Recycling of paper, bottles, and cans has become part of our culture. Now it is time to take the next step in recycling: school composting. Food leftovers are the single-largest component of the waste stream by weight, in the United States. Americans throw away more than 25% of the food we prepare, about 96 billion pounds of food waste each year. We spend about 1 billion dollars a year to dispose of food waste. This program will introduce students to the value of composting, the three different types of composting, and get up close and personal with some of the creatures that turn our food scraps into rich nourishing soil. This can be an informational program to teach students about composting or an introduction to creating a compost program for your school. The program can be presented to one class that would like to start a classroom compost program, or for the whole school to set up a school-wide program. For whole schools, our staff can work with your faculty to design a program tailored to your school's needs. This option is available for a special fee.



## **IF THE WORLD WERE A VILLAGE: MULTIPLE PERSPECTIVES (FOR GROUPS OF 100-150 STUDENTS)**

**Location:** School      **Presentation Style:** *Assembly or Individual Class Visits*

**Instructor Resources:** *PP Presentation, materials related to sustainability*

On a planet of over seven billion people, who lives here, what is life like for residents of our planet and how do our lifestyles affect the health of Planet Earth? Students will be broken down into regions that reflect the world's population. Using illuminating images and revealing data from the books, *If the World Were a Village* and *Material World*, students will be asked to represent their region as we examine food, sanitation, clothing, water, transportation, energy use. Then, through a revealing demonstration we will then compare the impact of different life styles and choices on our planetary resources and pollution levels. We will introduce the concept of "Needs vs Wants" to help students examine their assumptions and expectations about their lifestyles, understand how different their lives are from their peers in other countries and help them see themselves as global citizens. **Need a large open space with no furniture, a screen and projector set up as well as a microphone.**

## **I'M ONLY ONE PERSON, WHAT CAN I DO? (ONE HOUR ASSEMBLY FOR LARGE GROUP)**

**Location:** School      **Presentation Style:** *Assembly*

**Instructor Resources:** *PP Presentation, materials related to sustainability*

This presentation takes an in-depth look at the pressing issues of consumerism, solid waste and energy use. The program will begin with a discussion of how our attitude, behaviors and habits are formed and how they impact our decisions. Through discussion and demonstration, participants will learn about simple changes they can make in their homes and lives that will have a positive impact on our planet. The goal of this program is to empower students, giving them strategies for educating their families and show them how individual action does make a difference.

## **INTRODUCTION TO SUSTAINABILITY: APPLYING 21<sup>ST</sup> CENTURY THINKING SCI 21 ALIVE**

**Location:** School      **Presentation Style:** *Individual Class Visits*

**Instructor Resources:** *PP Presentation and materials relating to sustainability*

Sustainability is a word that has become a part of our daily lexicon. This program is designed to help students better understand what it means and how it applies to our daily lives. We will begin by learning about the mental models we as a society have been operating under for the past one hundred years and how these attitudes have formed our behaviors. Using a systems model, we will then examine a set of daily behaviors and choices we all make and track the resources used and pollutants produced using marbles. Then we will learn about the natural laws that guide our planet and go back to reexamine the behaviors and choices through these laws to determine if the resources and pollution produced has changed. After comparing the usage results, we will learn about how to create behavior change and new habits. **Assembly Model Not Available - 1-2 classes/1 hour**

## **NO-TRASH LUNCH**

**Location:** School      **Presentation Style:** *Individual Class Visits*

**Instructional Resources:** *PP presentation, examples of different lunch packaging and recycling material*

The average elementary school produces 324 pounds of lunch trash every day. That adds up to 58,329 pounds a year! Not only is that a lot of trash to deal with, but a lot of the packaging gets used once and thrown away. What a waste of natural resources! This program helps young people understand the consequences of throw-away lunches and how to pack a no-trash lunch.

## **RECYCLING: WHAT HAPPENS TO MY RECYCLABLES? SCI 21 ALIVE**

**Location:** School      **Presentation Style:** *Assembly or Individual Class Visits*

**Instructional Resources:** *PP Presentation, materials related to sustainability*

Recycling is something that is familiar to almost everyone, but when an item goes into the bin, what happens to it and is it truly sustainable? We will begin with an explanation of closed loop recycling (i.e. glass and metal) vs. open loop recycling (plastics) and measure both on a sustainability scale. We will follow the route both closed and open loop items take and what they become. Products made with recycled content will be used to assess the level of sustainability and examine other product options. **Can be done as an assembly.**

## SECRET LIFE OF YOUR HAMBURGER & OTHER FAVORITE TEENAGE FOODS

**Location:** School      **Presentation Style:** Individual Class Visits

**Instructional Resources:** PP Presentation and materials related to sustainability

The average American eats more than 68 pounds of beef a year. That's well over a pound a week. The problem is that there is a lot more to every hamburger than just the meat. This is not a vegetarian vs. meat eater program, it is a systems analysis that enables students to examine the full cycle of common foods eaten by Americans from the field/pasture to the plate. Students will create systems maps which will inventory and calculate the resources used by a number of common food items along with healthy, locally produced alternatives. Using the analysis of each system, students will be asked and create an argument, using evidence, on the sustainability of each. **Can be done as an assembly.**

## THE EXTRAORDINARY JOURNEY OF ORDINARY STUFF

**Location:** School      **Presentation Style:** Individual Class Visits

**Instructional Resources:** PP Presentation, Hands on sustainability puzzle activity

What do sneakers, a cell phone and a pencil have in common? This program will examine everyday items such as sneakers, t-shirt, cell phone, pencils through a cradle to grave assessment and an interactive mapping activity to help students better understand the extraordinary amount of natural resources and energy used to manufacture and transport these items around the globe. Students will leave with a new perspective as they discover how these everyday items are far more complex than ever imagined, along with the realization that "away" is not a reality on our crowded planet.

## UNDERSTANDING THE COMMONS SCI 21 ALIVE

**Location:** School      **Presentation Style:** Individual Class Visits

**Instructional Resources:** PP Presentation, hands on student activity, animal artifacts

Healthy Commons such as air, biodiversity, climate regulation, our collective future, water, libraries, public health, heritage sites and top soil, are what we all depend on and for which we are all responsible. Through a series of activities, this program will introduce students to the concept of the commons, their value and importance in our lives and our future. Together the group will establish a list of responsibilities, behaviors and actions to care for the Commons.

## WHAT'S YOUR FOOTPRINT? SCI 21 ALIVE

**Location:** School

**Presentation Style:** Individual Class Visits

**Instructional Resources:** PP Presentation, interactive student activity, materials related to sustainability

This program uses the Ecological Footprint to help students assess how their lifestyle impacts our planet. The Ecological Footprint is a measure of the amount of nature it takes to sustain a given population over the course of a year. Through the use of a PowerPoint presentation and a simulation, students will examine two very different lifestyles that creates two very different ecological footprints. First, a typical American and then to demonstrate the impact of behavioral change, one that includes mitigated behavior. Using what they learned, students will be asked to identify mitigating behaviors that are personally attainable. **Assembly Model Not Available - 1-2 classes/1 hour**

## WHERE DOES MY GARBAGE GO?

**Location:** School

**Presentation Style:** Individual Class Visits

**Instructional Resources:** PP presentation, materials related to sustainability

Lunch is over and your students clear off their tables, and toss their uneaten food, paper napkins and cups, and plastic utensils into the nearest trash can and like magic, it goes "away". But where is away and what is the impact of our garbage? Beginning with the understanding that the average American generates approximately 6 pounds of trash a day, we follow the trail of food, plastic, glass, metal, old batteries and electronics as they make their way to landfills, waste-to-energy incinerators, electronic waste dumps, recycling plants, composting facilities and our oceans. Students will be asked to assess the pros and cons of each of the garbage destinations. Then through a wants vs. needs activity, we will compare and assess the impact of reduction vs. production of garbage. **Can be done as an assembly.**

