Appendix B

Supporting Materials for School Outreach

Resource Guide for Educators

resources

The Lunch Line with Recycling in Mind

Links to lesson plans, activity guides, curricula, videos and more to teach students about waste reduction and recycling in the cafeteria and beyond.

Snohomish County
Public Works
Solid Waste

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Lesson Plans, Activities, & Curricula

Composting in Schools

Grade Level: K-12

A comprehensive guide for teachers interested in guiding students' research projects on composting. The book was selected by the National Science Teachers Association to be included in 'Recommends', a collection of the best science education books.

Link: http://www.css.cornell.edu/compost/schools.html

Close the Loop: Internet Scavenger Hunt

Grade level: 4-5

Students learn how to use the internet to find answers to their solid waste and recycling questions. Students record the answers to their search questions and cite sources in proper MLA format.

Link: www.recyclextreme.com/_pdf/Close%20the%20Loop%20Internet%20Scavenger%20Hunt.pdf.

A-Way With Waste

This Washington State focused activity guide presents integrated waste management concepts affecting land, air, and water. Environmental, economic, and political issues are addressed. The activities are designed to promote awareness, attitudes, and actions to solve waste management problems at home, in school and in the community. While the guide was written in the 90's, the website provides current information that serves as useful background information for teachers.

Link: http://www.ecy.wa.gov/programs/air/aawwaste/awwresources.html

Link for current waste and recycling information: http://www.ecy.wa.gov/programs/swfa/index.html

Clean Sweep USA

This website offers lesson plans that relate to garbage, recycling, and composting and are all aligned with the North American Association of Environmental Education's Guidelines for Excellence.

Link: www.cleansweepusa.org/educators.aspx

Two examples include:

> *Compost Office: Reducing Landfill Volume While Providing a Valuable Soil Supplement*
>
> Grade level: 6-8
>
> In this lesson, students identify materials needed in the composting process, identify problems that may arise in composting, and list ways to use compost.

Lesson Plans, Activities, & Curricula

Recycling Rules: Understanding Recycling and a Materials Recovery Facility (MRF)
In this lesson students identify ways recyclable materials can be separated and sorted; understand why recycling is worth the extra effort; and understand what happens during the recycling process.

Earth SAVER
Grade Level: 6-8
Earth SAVER is an environmental education curriculum designed for middle school students in Clark County, WA. The lesson plans are designed to encourage middle school students to conserve and protect the earth's natural resources through increased awareness of the resources that we use every day. Choose from an array of curriculum on waste reduction and recycling.
Link: www.clark.wa.gov/recycle/school/curriculum.html

Take It As It Comes?
Students engage in a class demonstration to learn first hand about the concepts of sustainability and conservation as they pertain to natural resource use. Students will understand that there are environmental and social costs associated with using natural resources. They will see that these resources need to be carefully managed in order for them to be available for future generations and to protect the environment from degradation.

Watch Where You Step (Material Resources unit)
Students look into the life cycle of a soda to gain a deeper understanding of the diverse natural resources that are required to produce this single product. Students then take this insight and apply the reflection process to a product of their choice in small groups, outlining the ecological footprint that we make when we use various products. Students will learn to look more deeply at the products that they use and gain an appreciation for the energy, labor and resource-intensive processes that go into these products.

Warranting Waste (Material Resources unit)
Students sort school waste by material then measure the weight and volume of one day's worth of waste. Pre-prepared auditing forms contain instructions and are meant to be self teaching. Seeing first-hand the quantity and composition of the waste that they produce each day, performing a waste audit will impress upon students just how much garbage they produce everyday and how much could be diverted. Students will become more aware of material resource use within their school, see what is wasted and determine how changes can be made to reduce their waste.

Lesson Plans, Activities, & Curricula

King County Waste Reduction and Recycling Activity Guides

Use the following King County activity guides to teach your students about reuse, waste reduction and recycling.

Be a Garbage Gumshoe

Grade level: 3-6

Students conduct a garbage and recyclables audit as a first step in improving recycling habits.

Link: http://your.kingcounty.gov/solidwaste/elementaryschool/documents/gumshoe.pdf

Composting: Worm Recycling

Grade level: K-12

Students build and maintain a worm bin and learn about nature's version of recycling.

Link: http://your.kingcounty.gov/solidwaste/elementaryschool/documents/worms.pdf

Grocery Store Scavenger Hunt

Grade level: 3-6

Students discover how they and their families can make buying choices that help reduce the waste stream.

Link: http://your.kingcounty.gov/solidwaste/elementaryschool/documents/hunt.pdf

Plan a Waste-Free Lunch

Grade level: 1-6

Students learn about the types of waste produced from lunch packaging and plan a lunch that yields less waste.

Link: http://your.kingcounty.gov/solidwaste/elementaryschool/documents/lunch.pdf

iRecycle @ School

Grade level: K-12

Free 4Rs Teaching Kit

Teaching about the concepts of reduce, reuse, recycle, and rot (composting) helps students understand the concepts of renewable and non-renewable resources and the web of life. These resources, including videos and a curriculum guide, at www.stopwaste.org were created for teachers and students in Alameda County, CA but can be easily tailored for students in the Snohomish County area.

Link: www.stopwaste.org/home/index.asp?page=450

Lesson Plans, Activities, & Curricula

Washington Green Schools - Recycling and Waste Reduction Assessment

The purpose of the Recycling and Waste Reduction Assessment is to identify current methods of recycling and waste handling at your school. Use this Assessment to find out what your school is already doing to reduce, reuse, and recycle waste, and use the results to choose activities from the Recycling & Waste Reduction Action List. This will be open to all Washington schools in the 2009-2010 School Year.

Link to the program home page: www.wagreenschools.org

Link to the assessment: www.wagreenschools.org/files/140.pdf

Recycling by Composting

Grade level: 6-8 and can be adapted to suit other grades

In this project, students investigate the amount of food and yard waste produced in their local area. Incorporating elements of the scientific method, they perform an experiment to find out how compost can improve soil quality and help plants grow. Finally, they organize a composting project and fertilize a garden.

Link: www.thirteen.org/edonline/wue/land2_overview.html

Rethinking Recycling: An Oregon Waste Reduction Curriculum

Rethinking Recycling contains activities and lesson plans for students in grades K-5. The lessons below can be used separately or as a unit.

Link: www.deq.state.or.us/lq/education/curriculum.htm

Lesson 12: Lunchroom Trash

Grade level: K-3

Students take a first-hand look at excess packaging and determine ways to reduce waste.

Lesson 16: Composting in a Jar

Grade level: K-3

Students examine how some wastes are recyclable through composting and learn vocabulary words: decompose and composting.

Lesson 10: Packaging - The Good, The Bad, and The Ugly!

Grade level: 4-5

Students recognize natural resources in packaging, identify the different purposes for packaging, and decide if packaging is necessary and appropriate.

Lesson Plans, Activities, & Curricula

Lesson 18: Now You See It, Now You Don't
Grade level: 4-5
Students classify organic and inorganic objects, perform a mini-compost experiment, record observations, and compare and contrast decomposition rates for organic and inorganic materials.

Save Organic Scraps Elementary Curriculum
Grade level: K-5 unless otherwise noted
The Save Organic Scraps elementary curriculum tackles the core themes of environmental education through a variety of engaging lessons. The information and related activities are intended to provide all students with a basic understanding and vocabulary of waste management and the role the 4 R's (reduce, reuse, recycle, rot) play in the environment and sustainability. The curriculum is presented in two parts: "Connections from the Cafeteria to the Classroom" and "The 4 R's Everyday."
Link: www.recyclextreme.com/teachers_teach_k-5.cfm

Connections from the Cafeteria to the Classroom
Students will learn how to define solid waste and use properties to identify, describe and categorize materials. Students will learn the four ways that waste has been handled through history, why it is an important issue in society, and the systems that have developed.

- Background Information for Teachers:
  Connections from the Cafeteria to the Classroom
- Solid Waste In Clark County (PowerPoint)
  Grade level: K-2
- Solid Waste In Clark County (PowerPoint)
  Grade level: 3-5
- Modern Landfill Diagram
- Landfill vs. Compost
- The Problem with Litter
- Natural Resources and the Role of Recycling

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- Waste Not in School
- Trash Disposal and Society 1: Past and Present
- Trash Disposal and Society 2: Future
- Save Organic Scraps Glossary Crossword
- Our Trash Defines Us Waste Audit
- Close the Loop Internet Scavenger Hunt
- 9 Cities of Troy Diagram
- Cedar Grove 4 Process Pictogram

The 4 R's Everyday

These lessons reinforce the lessons learned in Connections from the Cafeteria to the Classroom and tackles the issues of conserving resources and protecting the environment. The lessons challenge students to place issues within systems and apply their knowledge of waste management.

- The 4 R's Everyday Student Pre-Assessment
- A–Z Recycling
- Science, Sculpture and Recycled Materials
- Solid Waste in Specific Environments
- Background Information for Teachers: The 4 R's Everyday (Coming Soon!)
- The 4 R's Everyday PowerPoint (Coming Soon!)
- Additional Lesson Plans (Coming Soon!)

Scraps to Soil: A How-to Guide for School Cafeteria Composting

Grade Level: K-12

This hands-on implementation guide features an easy-to-read student section, followed by a more detailed, cross-referenced teacher section, and appendices with in-class activities and resources. Shipped via US Postal Service, $8 plus postage.

Link: http://vtrecyclers.org/resources.php?ID=32

Lesson Plans, Activities, & Curricula

Trash Goes To School
Cornell Waste Management Institute
Grade level: K-12
Trash Goes to School provides teachers with solid waste background information, activities for K-12 to present a well balanced picture, ideas on how to use solid waste issues in teaching many subjects, including math, science, English, social studies, and home economics, and glossaries appropriate to the grade levels.
Link: http://cwmi.css.cornell.edu/TrashGoesToSchool/TrashIntro.html

The Adventures of Herman the Worm Grades K-5
A website for younger kids to learn about composting, worm bins and the biology of earthworms. What's on the menu at the Worm Deli? ¡En Español tambien!
Link: www.urbanext.uiuc.edu/worms/

Project Learning Tree
Project Learning Tree offers several environmental education modules that are aligned with national standards. One of the modules is about municipal solid waste and has several hands-on classroom activities. Teachers have to go through a workshop in order to receive the curriculum materials so this is for those who are interested in learning about more than recycling. Contact the State Coordinator for information on upcoming workshops:

Lynne Ferguson
Washington Forest Protection Association
724 Columbia Street., NW, Suite 250
Olympia, WA 98501
Phone:360-705-9282, Fax:360-352-4621
Email:lferguson@wfpa.org
Link: http://www.plt.org/index.cfm

Environmental Protection Agency – Teacher Resources
The EPA has numerous, up-to-date resources – including activities and background information – to use in the classroom on many topic areas such as waste and recycling.
Link: http://www.epa.gov/teachers/waste.htm

Lesson Plans, Activities, & Curricula

Waste-Free Lunch Poster and Activities

Learn how to be waste-free! The EPA developed the Waste-Free Lunch poster to help students learn how to reduce, reuse, and recycle items in their school lunches. Use the poster to get your students interested in waste-free lunches and to learn how to organize a Waste-Free Lunch Day. Activities for your students can be found on the back of the poster and are available individually in through the web link below.

Link: www.epa.gov/epawaste/education/lunch.htm

A Guide to the Integration of Solid Waste Management into the Curriculum

This guide, while written specifically for the students in Barbados, contains a series of interdisciplinary activities and support materials that focus on the often complicated scientific, technical, and policy issues related to solid waste management. It includes ready-to-use lesson plans, supplemental handouts and hands-on materials that teachers can use and tailor for the Snohomish County region. Listed below are a few activities with a specific focus on lunch waste reduction and food scrap composting.

Link: http://solid.gov.bb/Guide/curriculum.asp

Lesson 3.1: The Great Lunch Dilemma
Grade level: 6-8
Students consider actions that generate lunch trash. Students examine ways in which they can generate less lunch trash.

Lesson 3.8: A Great, Rotten Idea
Grade level: 6-10
Students will be able to explain municipal solid waste composting, identify compostable types of solid waste, list the uses of compost and composting, and investigate the pros and cons of composting.

Lesson 3.9: Compost Project
Grade level: 6-10
Creating a compost pile as a classroom project will demonstrate to students that natural materials can be recycled.

Recycling Fact Sheets

Washington State Recycling Association (WSRA) has fact sheets that can be used as resources for your classroom.

Link: http://www.wsra.net/Education/education.asp and http://www.wsra.net/Education

Lesson Plans, Activities, & Curricula

Worms Eat Our Garbage: Classroom Activities for Better Environment.
Mary Appelhoff , Mary Frances Fenton, and Barbara Loss Harris
Michigan: Flower Press, 1999
With lesson plans for elementary and middle school students, the curricula in this teaching aid provide background information about using worm bin composting methods to handle food waste, instructions on how to set up a bin, and extra activities for students. Each curriculum lists which skills are used for the activities, including math, communication, observation, comprehension, and more. Some activities can also be adapted for use with high school students.

The Wonderful World of Wigglers: Exploring the Mysteries of the Mighty Earthworm Through Stories and Activities for the Curious Child
Julie Hand
Vermont: Food Works, 1995
Students of all ages learn critical and creative thinking skills through a set of interactive lessons geared towards teaching the ins and outs of vermicomposting. Wilma Worm leads children through imaginative lesson plans, such as Wormley's Believe It Or Not, Good-bye Garbage, A Healthy, Happy Home, and Earth Circle of Life Mural.

The Worm Café: Mid-Scale Vermicomposting of Lunchroom Wastes.
Binet Payne
Michigan: Flower Press, 1999
This resource outlines steps to compost food scraps at a school or small business, with lesson plans that teach students how to set up, maintain, and harvest castings from a worm bin composting system. Lessons include performing a waste audit for the entire school, gathering all the necessary materials, identifying the anatomy of worms, and harvesting finished compost.

Videos

Cafeteria Food Recycling

This video showcases the food scrap recycling efforts of schools in Clark County. This clip provides great background information for teachers.

Link: www.cityofvancouver.us/cvtv/cvtvarchive/Clark_County_Close_Up/2007_Events/02-04-07/5_Cafeteria_Food_Recycling.wmv

Compost...Because a Rind is a Terrible Thing to Waste!

Cornell Waste Management Institute

Food scrap composting for large institutions includes: a 30-minute video to provide businesses and institutions with basic information about food scrap composting and the technologies being used, and a 7-minute video to promote food composting to institutions who are considering doing food composting.

Link: http://ecommons.library.cornell.edu/handle/1813/11314

Eco-Clips

The Save Organic Scraps (S.O.S) program of Clark County hosts a variety of video clips with an Xtreme sports theme to engage students. The videos teach about food scrap recycling at school and the many benefits of organics recycling.

Link: www.recyclextreme.com/videos.cfm

Clark County Student Videos

Grade level: 6-8

Action! is what it is all about, and some students in Clark County, Washington have taken the message from the classroom into action in these student films. Collaborating with the Save Organic Scraps education team and fellow students, under the leadership of an A+ teacher these students have created unique public service announcements to share with their school and the community.

Link: www.recyclextreme.com/student_videos.cfm

Wormania!

Grade level: K-12

Worm Woman visits the Brennan kids who learn about worms-how they move, their role in soil ecology, and how they breed -- and how to set up a worm bin for composting organic waste. The video incorporates unique footage of worms in their natural habitat, and shows microscopic images of the beating of a worm's five pairs of hearts.

Videos

Length: 26 minutes
Link: http://your.kingcounty.gov/solidwaste/education/videos.asp

Worm Bin Creatures
Grade level: 6-12
Length: 31 minutes
Explore more than a dozen critters under a microscope as they search for food and shelter in their worm bin home.
Link: http://your.kingcounty.gov/solidwaste/education/videos.asp

Field Trips

Tour of Cedar Grove Composting
See the magic of composting large scale! Bring your students to Cedar Grove's composting facility in Everett to see where their cafeteria food scraps go and to learn about Cedar Grove's process that turns waste into healthy compost in just 80 days.

Contact Robert Cavness to schedule a field trip:
Phone: 206-832-3238
Email: robertc@emeraldnw.com

Funding Opportunity

Terry Husseman Sustainable School Awards
The Terry Husseman Sustainable School Awards promote sustainability and reward public and private school efforts to reduce waste and increase environmental curricula. The Department of Ecology wants to encourage schools to be role models in environmental stewardship for students and community members. Ecology plans to distribute as much as $30,000 among the winners in 2009.
Link: www.ecy.wa.gov/programs/swfa/terryhusseman.html

Additional Resources

Snohomish County Public Works - Solid Waste Resource Library
This site offers an array of composting and recycling brochures that are available upon request – some are downloadable.
Link: http://www1.co.snohomish.wa.us/Departments/Public_Works/Divisions/SolidWaste/Brochures/default.htm

Washington Department of Ecology
This website has a great deal of information on waste and recycling and composting. Here is the direct link to up-to-date composting information.
Link: http://www.ecy.wa.gov/programs/swfa/compost/

Washington Organics Recycling Council
This website has up-to-date information on composting and may serve as a good resource for background information.
Link: http://www.compostwashington.org/

OSPI EES Program Curriculum Integration and Instructional Alignment Guide
Discover tools for how to bring sustainability education into your classroom, including an instruction alignment guide.
http://www.k12.wa.us/curriculumInstruct/EnvironmentSustainability/CurriculumAlignment.aspx

Environmental Education Guidelines for Washington Schools
This report provides the environmental education guidelines that are mandated to be taught in all public schools.
http://www.k12.wa.us/CurriculumInstruct/EnvironmentSustainability/pubdocs/EEGuidelines2000.pdf

Environmental Education Report: Empirical Evidence, Exemplary Models, and Recommendations on the Impact of Environmental Education on K-12 Students
This report provides an overview of the impact of environmental education on Washington students.
http://www.k12.wa.us/curriculumInstruct/EnvironmentSustainability/pubdocs/EEReport.pdf