

Environmental Stewardship Program

Pre- and Post-Activities

BACKGROUND FOR TEACHER

In this lesson, we aim not only to teach students about what environmentally-friendly measures we have in place here at Longwood Gardens but also to get them thinking about the steps they can take to be stewards of their environment at their schools and beyond. At Longwood, we focus on habitat restoration, environmentally-friendly pest management, renewable sources of energy, water conservation, and more. We connect our initiatives to possibilities in other settings in order to jumpstart students' thinking about environmental stewardship in their own lives.

VOCABULARY

Integrated Pest Management
Sustainability
Watershed
Conservation

Stewardship
Ecosystem
Biodiversity

NEXT GENERATION SCIENCE STANDARDS

Standard: HS-LS2. Ecosystems: Interactions, Energy, and Dynamics Performance Expectations

HS-LS2-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

Standard: HS-ESS3. Earth and Human Activity Performance Expectations

HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.



- HS-ESS3-2** Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
- HS-ESS3-3** Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.
- HS-ESS3-4** Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.

NATIONAL STANDARDS

Geography Standard 8: Understands the characteristics of ecosystems on Earth's surface

Geography Standard 14: Knows the ways in which the physical environment is stressed by human activities

Geography Standard 15: Understands how physical systems affect human systems

Economics Standard 1: Understands that scarcity of productive resources requires choices that generate opportunity costs

ACTIVITIES

Sustainability at Home

1. Have students brainstorm a way to be more sustainable at home. They should choose a small lifestyle change and implement it as a habit for two weeks (e.g. take shorter showers, use reusable grocery bags, etc.).
2. Students should create and present a slideshow about what they did, how easy or difficult it was, what impact it can make, and whether they will continue the new habit.

Construct a Sustainable Settlement

1. As a class, have the students brainstorm needs and roles necessary to establish a successful, self-sustaining settlement in an undeveloped area.
2. Split the class into each of the roles identified to fill the needs.
3. Have the students work together to devise a plan for fulfilling their individual role in this new community.
4. The students should use recycled materials to model the infrastructure of the settlement related to their role.
5. When all of the structures from the students are placed together, they should form a model community that is self-sustaining.



Design an Eco-Friendly Garden

1. Divide the students into small groups.
2. Tell the students about the Three Sisters agricultural method used by many Native American groups. In this method, people planted three sister crops: beans, corn, and squash. The beans fertilized the soil, the corn provided a structure for the beans to climb, and the squash's large leaves covered the ground to prevent weeds from growing.
3. Have the students design a garden that is similarly sustainable. They may use whatever plants and materials they want, but they should focus on maximizing the positive impact on the environment (e.g. attracting native pollinators, increasing biodiversity, etc.) and minimizing the negative impact (e.g. polluting with pesticides, using invasive species, etc.).
4. The students should create a poster with drawings of their garden and the reasons they designed it the way they did. They should present this poster to the class.

WORKSHEETS

Sustainability Survey

1. Print the worksheet on page 5 and have the students fill it out in groups using the information they learned in the lesson to identify areas in which they practice or could improve on their environmental stewardship.
2. Review the results as a class.
3. Optional, work with the students to choose a feasible idea for improving their environmental stewardship, and help them manage a project to implement the idea in their classroom, grade level, or school.

WEB RESOURCES FOR TEACHERS AND STUDENTS

EPA

www.epa.gov/students/lesson-plans-teacher-guides-and-online-environmental-resources-educators

Purdue University

www.extension.purdue.edu/extmedia/FNR/FNR-476-W%20Discovering%20the%20Watershed%2013.pdf

Teach for America

www.teachforamerica.org/top-stories/lesson-plans-teaching-sustainability

U.S. Energy Information Administration: Energy Kids

www.eia.gov/kids/

Native Seeds/SEARCH

www.nativeseeds.org/learn/nss-blog/415-3sisters



LONGWOOD GARDENS

Seed Your Future

www.seedyourfuture.org

Scholastic

www.scholastic.com/bloom

We Are Bloom

www.wearebloom.org



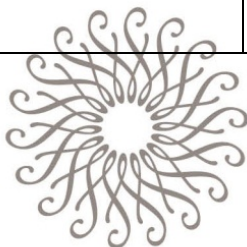
Sustainability Survey

Name: _____

Date: _____

Look around your home, school, and neighborhood and see where you can find sources of environmental stewardship or degradation. Point out how that area affects the environment, through resource use, waste, etc. Brainstorm ways that you could improve the system in place and be more sustainable.

Area of Impact	Effects on Environment	Ways to improve
Example: School cafeteria	Food waste, waste from disposable containers, gas emissions from shipping food in from far away sources	Compost bins for food waste Compostable containers Produce & utilize some food from a school garden



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