

## SUSTAINABLE LANDSCAPE

### LESSON OVERVIEW

#### OBJECTIVE

Students will further investigate the concepts of recycle and reuse by applying actions to their own life and school environment.

#### RECOMMENDED GRADE LEVELS

5-12

#### DURATION

30- 90 minutes

#### MATERIALS

- Clean items from trash/recycling
- Markers or crayons
- Poster paper
- Access to internet or library for students to research sustainable design topics.

### TOPIC BACKGROUND

During your trip to Brooklyn Bridge Park, students learned how the Brooklyn waterfront has undergone many periods of transformation. Building a park on former industrial piers is a great example of **adaptive reuse**. This process of reusing an old site or building for a purpose other than which it was built or designed for has become a popular aspect of **sustainable design**. Such a project enables the creation of something new while utilizing the resources already existing or in place, as opposed to demolishing and starting from scratch. The results, as seen in Brooklyn Bridge Park, are usually economic savings, reduction of environmental footprint, and even preservation of historical materials. During the pre-trip activities, students learned about reducing their use and consumption of resources. Now we will further explore two other important practices; reusing and recycling. In our everyday lives, we can find small-scale ways reuse and repurpose things.

### GETTING READY

#### Activity 1:

1. Students will be asked to each bring in a material that they usually throw away. Alternatively, the teacher may want to collect items for the students instead. Items should be clean/washed, no foods, no materials with excessive food still on them, no sharp edges, and nothing inappropriate for a school setting.
2. Some examples include: egg cartons, newspaper, yogurt containers, metal can, plastic bags, old CDs, cardboard boxes, plastic utensils, old t-shirts, Styrofoam, etc.

#### Activity 2:

1. Gather coloring materials (such as markers, colored pencils, crayons) and poster paper.

## PROCEDURE

### ACTIVITY 1: HOUSEHOLD MATERIAL REUSE

#### VERSION 1: HOMEWORK ASSIGNMENT

1. Ask each student to collect and bring in one item from their home recycling or trash. Provide some guidelines: items should be clean, no foods, no materials with excessive food still on them, no sharp edges, and nothing inappropriate for a school setting. To start students off you can provide a few examples such as, egg cartons, newspaper, yogurt container (cleaned), metal can, old CDs, etc.
2. Have students trade items with a classmate. (Or collect all & redistribute new ones to each student)
3. Instruct students that their take-home assignment is to figure out a way to repurpose the item they have received and bring back to class the following day. For example, decorate a metal soup can to reuse as a pencil cup or repurpose an empty pill bottle to hold hairpins or coins.
4. Give students an opportunity share/present their creations, followed by a writing prompt or group discussion on “Why is reusing or repurposing materials important?”

#### VERSION 2: IN-CLASS GAME

1. Alternatively, using the materials students bring in, play a game with students that challenges them to quickly think of different ways a item can be repurposed.
2. Group students into teams of 4 or 5 people. Give each group one item and a piece of paper. Explain that their team will have 2 minutes to write down as many ways to repurpose their item as they can think of.
3. Set a timer to instruct groups when to start and stop making their lists.
4. Have teams share out their list. To end with the “winners” (the group with the largest list) start by asking, “*which groups thought of 5 or less things?*” Allow those teams to present. Continue in this pattern until you’ve reached the group with the longest list. I.e. which group had up to 10 things? 15? 20? 25

### ACTIVITY 2: REUSE & RECYCLING IN THE SCHOOL

1. As a class, discuss ways students and teachers could be reusing and recycling more in school. Make a list on the whiteboard of the ideas generated. Some examples could include: creating a scrap paper collection in each room for teachers and students to reuse paper they would normally throw in the recycling; encouraging students to bring reusable bottles and reusable lunch bags; on clean out days have a collection for unwanted items that can be donated; creating an e-waste recycling system; improved educational signage about the items that can be put in recycling bins.
2. Assign students partners to create a hallway poster advocating for the school community to adapt these new sustainability practices. Either allow them to self-pick a topic from the list the class made, or assign each group a topic.
3. Give guidelines, such as, the poster must clearly promote the desired behavior change and also explain the underlying environmental issue. Hang completed posters in the school hallways!

### ACTIVITY 3: SUSTAINABILITY PROPOSAL

1. Have students think back to the trip at Brooklyn Bridge Park and the various elements of sustainable design that were discussed.
2. Challenge students to think of one significant sustainable practice or design element that they wish existed in their school. (i.e. solar panels, vegetable garden, UV blocking curtains, compost system, rain barrels)
3. Ask each student to write a letter to the principal with a proposal for their sustainable idea. Letters should include an explanation of why their suggested implementation will help the school become more sustainable or improve their environmental footprint. Consider requiring students to perform background research on their topic and practice using citations in their letters.

### RECOMMENDED BOOKS

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*Designing Green Communities* by Janice Dyer (Gr. 5–8)

*Generation Green: The Ultimate Teen Guide to Living an Eco-Friendly Life* by Linda and Tosh Sivertsen

*Reduce, Reuse, Recycle: An Easy Household Guide* by Nicky Scott

### RECOMMENDED WEBSITES

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Environmental Advocacy for Youth  
<https://sustainus.org>

Sustainability Lessons Clearinghouse  
<http://www.greeneducationfoundation.org>

Green Schools Alliance  
<https://www.greenschoolsalliance.org>

Video: What is Sustainability? (10 mins)  
<https://www.youtube.com/watch?v=rmQby7adocM>

## VOCABULARY

**Adaptive Reuse:** the process of reusing an old site or building for a purpose other than which it was built or designed for.

**Carbon footprint:** A measure of CO<sub>2</sub> emissions that results from an individual's various activities which produces CO<sub>2</sub> during a given time period.

**Conservation:** The use of natural resources in a way that ensures their continuing availability to future generations; the wise use or protection of natural resources.

**Consumer:** A person or thing that eats, purchases, or uses something.

**Finite resource:** Also called a nonrenewable resource; a resource that does not renew itself at a sufficient rate for sustainable economic extraction in human time-frames. Examples include, coal, crude oil, natural gas, rocks, and minerals.

**Natural resource:** A material that is naturally occurring, not produced by humans. Examples include water, grass, soil, rocks, animals, crude oil.

**Nonrenewable resource:** Also called a finite resource; a resource that does not renew itself at a sufficient rate for sustainable economic extraction in human time-frames. Examples include, coal, crude oil, rocks, and minerals.

**Pollution:** Contamination of soil, water, or atmosphere by discharge of harmful substances.

**Population:** The number of a particular species in a defined area.

**Preservation:** Protection that emphasizes nonconsumptive values and uses; to keep in a perfect or unaltered condition.

**Recycle:** The act of processing used or abandoned materials for use in creating new products.

**Restoration:** The act of returning something to a former condition.

**Reduce:** Using less of something.

**Reuse:** When an item is used more than once, typically for the same function.

**Renewable resource:** A resource that is replaceable when properly conserved and has the capacity to renew itself within human time-frames. Examples include, plants, animals, solar energy.

**Sustainable design:** The philosophy of designing physical objects, the built environment, and services with the intention to reduce or completely eliminate negative environmental impacts

**Sustainability:** meeting the needs of the present without compromising the ability of future generations to meet their own needs. A sustainable lifestyle involves limiting one's impact on the environment and consumption of natural resources so that there will be sufficient materials and a healthy planet for all people in the future. Also referred to as sustainable development.

## STANDARDS

### COMMON CORE ELA

- Speaking and Listening
- Literacy in Technical Subjects
- Literacy in Science
- Writing Standards

### COMMON CORE MATH

- Number System
- Quantities
- Ratios & Proportional Relationships

### NYC K-8 SCIENCE & SOCIAL STUDIES SCOPE & SEQUENCE

- Humans in their Environment
- Needs & Tradeoffs
- Earth Materials

### NEXT GENERATION SCIENCE STANDARDS

- 5. Earth and Human Activity
  - MS. Human Impacts
  - MS: Earth Systems
  - HS. Human Sustainability
  - HS. Earth and Human Activity