Green by Design

This lesson was created as a supplement to the *Green by Design* program at the National Building Museum. It is designed to be used in your classroom independently, or as an activity before or after a school program at the Museum. For more information about and to register for the National Building Museum's school programs, visit http://www.nbm.org/schools-educators/school-visit/.

The *Green by Design* program helps fourth through ninth grade students understand the issues associated with making environmentally friendly living decisions and the effects of these decisions on their surroundings. It encourages young people to explore how design decisions are made and how they impact the natural and built environment.

National Building Museum

Created by an act of Congress in 1980, the National Building Museum explores, celebrates, and illuminates achievements in architecture, design, engineering, construction, and planning. Since opening its doors in 1985, the Museum has become a vital forum for exchanging ideas and information about such topical issues as managing suburban growth, designing and building sustainable communities, and revitalizing urban centers. A private, nonprofit institution, the Museum creates and presents engaging exhibitions and education programs, including innovative curricula for school children.

Over the past two decades, the Museum has created and refined an extensive array of youth programming. Each year, approximately 50,000 young people and their families participate in hands-on learning experiences at the Museum: 2-hour-long school programs for grades K–9; major daylong festivals; drop-in family workshops; programs helping Cub and Girl Scouts earn activity badges; and three innovative outreach programs, lasting between 30 and 60 hours, for secondary school students. The Museum's youth programming has won the Washington, D.C., Mayor's Arts Award for Outstanding Contributions to Arts Education and garnered recognition from the National Endowment for the Arts.

NATIONAL BUILDING MUSEUM
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Red Line Metro, Judiciary Square

What a Piece of Junk!*

Ever wonder if the parts of a cell phone are recyclable? Walked on a floor made of bamboo? Or wondered how to dispose of an aerosol can? If so, you are the happy or unhappy beneficiary of a choice made, in large part, by a designer. Choices that have the least negative impact on the health of people, the economy of an area, and the environment result in what is called "sustainable design." The goal of sustainable design is to meet the present generation's needs without compromising future generation's ability to meet their needs. But consumers can also affect sustainable design by the choices they make. If people don't buy a design, eventually it will no longer be made. In this lesson students will learn how choice plays an important role in sustainable design.

*This activity was adapted from *Why Design?* a publication by the National Building Museum.

OBJECTIVES

Students will:

- understand the roles of both designers and consumers in creating sustainable designs
- understand the effect of making choices and compromises as an important part of sustainable design

NATIONAL STANDARDS OF LEARNING

Science . . . . . F
Social Studies 1, 2, 4, 7, 10
Technological Literacy 18,19, 20
Visual Arts 3

DURATION

1 hour

MATERIALS

- *What a Piece of Junk!* worksheet
- pens or pencils
- poster board
- 2 objects (for each pair of students) that are designed to meet the same need (writing instruments, something that can scoop food, a container smaller than a shoe box that holds liquids). These objects can be brought from home.

TEACHER PREP

- Photocopy *What a Piece of Junk!* worksheets (one for each pair of students)
- As student homework, ask students to bring in one object that meets a specific need (a writing instrument, something that can scoop food, a container smaller than a shoe box that holds liquids). The class can be divided into 3 groups, each group bringing in objects from one of the three categories. The students will then be matched in pairs during the lesson; they will come back together in the conclusion to discuss all the objects.

LESSON PROCEDURE

1. Introduction to Sustainable (Green) Design
2. Sustainable Design as choices
3. Evaluate object pairs
4. Conclusion: Making the choice

GREEN VOCABULARY

Sustainable, design

LESSON PLAN

1. Introduction to Sustainable (Green) Design
Introduce students to the ideas of sustainable design. Explain that sustainable design means:

- Creating products/buildings that have the least negative impact on the health of people, the economy of an area, and the environment
- Meeting the needs of present generations without depleting the ability of future generations to meet their own needs

2. Sustainable Design as choices
Tell students that designers concerned with sustainability consider things like: Will the paint give off a lot of fumes? Which material will create the least waste when it's processed and disposed of? Does this wood have to be trucked across the country, or will local wood be just as good (and help the local economy)? Consumers also need to ask themselves questions too.

Ask the students what questions they think should be asked before making a purchase. Designer and teacher Victor Papanek has suggested that before making a purchase we ask ourselves the following six questions:

- Do I really need it or am I being persuaded through advertising that I need or want it?
- Will something else serve the purpose?
- Are there substitutes I already own that will perform the same, or a similar, function?
- Can I share, rent, borrow, or lease it?
- Can I buy it used?
- Can I make it from a plan or build it myself?

Our choices can affect sustainable design too. If we don't buy a design it will eventually no longer be made.

3. Evaluate object pairs

Pair the students up; making sure each pair has two objects to evaluate. Use the student worksheet to evaluate the object pairs. Students may add their own criteria to the list that already exists.

Ask students to decide which one of the pair they think is the most sustainable design (or least harmful to the environment and future generations)?

4. Conclusion: Making the choice

As a class, ask students to discuss the choices they made. Were the choices easy? Did they have to make a compromise (chose something more expensive because it had more efficient packaging)? Do they think any one of the criterion is more or less important in making the decision?

What conclusions can they make? Use student's answers to discuss the following ideas:

- questioning design is important to being sustainable; and
- each person's choices may be different but are equally valid.

What a Piece of Junk! Student Worksheet

NAME:

As you evaluate each product, put an X closest to the word or phrase that best describes it. Use the top half of the line for one product and the bottom for another.

Name of product on top half of line: ***Name of product on bottom half of line:***

parts are easy to get		**parts are hard to get**
safe		**unsafe**
accomplishes many tasks		**accomplishes one task**
requires little energy to operate		**requires a lot of energy to operate**
made from renewable/recycled materials		**made from nonrenewable materials**
recyclable or reusable		**must be disposed of after one use**
efficient packaging		**excessive packaging**
decomposes quickly		**takes years to decompose**
well made/durable		**poorly made/falls apart easily**
suited to a person of any physical ability		**suited to a very specific user**
manufactured close by		**manufactured far away**
easy to maintain/fix		**hard to maintain/fix**
works without additional purchases		**requires other purchases to work well**
materials required little processing		**material required a lot of processing**
easy to understand and use		**difficult to understand and use**
meets my physical needs		**doesn't meet my physical needs**
meets my emotional needs		**doesn't meet my emotional needs**
overall this design is worthwhile		**overall this design is a waste**

