

Pre- and Post-Visit Activities: What is a “Green” Building?



Overview:

These activities, which support the Staten Island Museum’s lesson “Our ‘Green’ Building,” introduces students to the process of LEED certification and the importance of sustainable living.

Three components:

1. Background: Information about LEED certification and building design in order to prepare yourself and your students for your trip to the Staten Island Museum.
2. Pre-Visit Activity: Before your visit, read an article on “green architecture.”
3. Post-Visit Activity: Back in the classroom, students will draw upon what they have learned during their trip to the Museum and assess if any LEED protocols for sustainability are being implemented at their homes or school.

Materials:

1. Background information for teachers and students.
2. Link to “Green Infrastructure: What Makes a Structure a ‘Living Building’?”
3. *Article Investigation* handout.
4. *LEED Checklist* for their home or school.

Background Information:

LEED, or Leadership in Energy and Environmental Design, is a development program implemented by the U.S. Green Building Council as a way to promote sustainable living and conscientious building design. Buildings pursuing LEED certification are awarded points across several areas that address sustainability issues. Depending on how many points the building earns in the six areas of assessment, it will be awarded a Certified, Silver, Gold or Platinum rating level.

LEED buildings specifically aim to be more efficient; reducing water usage, use energy-saving fixtures, and limit greenhouse gas emissions. They use materials that have been recycled or come from local sources. They are non-toxic or limit the amount of airborne toxins. LEED buildings also are spaces that promote a healthy work environment, with open design features and windows for natural lighting. LEED certification process encourages designers to think critically about how buildings are planned and developed, and consider the impact the project will have on the environment, the occupants and surrounding community.

Vocabulary:

Climate: weather conditions in a particular area

Closed loop geothermal well-field: an energy system that uses the Earth and a series of circulating pumps to heat and cool buildings. In a closed loop system, a heat exchanger is buried underground. In the winter, the fluid circulates continuously inside the buried pipe and absorbs heat from the earth for use inside the building. In the summer, the fluid takes heat from inside the building and transfers it back into the earth

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Erosion: the gradual destruction of something

Geothermal energy: clean and sustainable energy that comes from the heat deep inside the Earth

Greenspace: an area of grass, trees, or other vegetation set apart for recreational or aesthetic purposes in an otherwise urban environment

Heat exchanger: a loop of piping filled with fluid that is typically buried underground

Net-Zero: a building that uses no more energy than it generates itself

Ozone layer: a part of Earth's atmosphere that helps absorb harmful ultraviolet radiation from the sun

Refrigerants: a substance used for cooling something by absorbing heat from it

Renewable Energy: energy that comes from sources that are naturally replenished like wind, sunlight, tides, or geothermal heat

Sustainability: development that can last forever and meets the needs of the present without compromising the needs of future generations

Before Your Visit:

Grades 6-8

Read the following article: "[Green Infrastructure: What Makes a Structure a 'Living Building'?](#)"

Have the students answer the *Article Investigation* handout. Then engage students in a group discussion about their answers and opinions.

After Your Visit

Grades 6-8

Have the students take the modified *LEED Checklist* and, continuing their duties as building inspectors, look for these elements of sustainable living in their own homes or school. Have a discussion about what elements they discovered being used—which ones do they think were the easiest to implement, which ones might be more difficult? Were there several checked boxes or only a few?

Article Investigation

Name: _____

Article: _____

What is "green infrastructure"?

In what ways can we use nature to design buildings that are better for the environment? What examples does the article reference?

Why do you think incorporating nature and natural ecosystems into our buildings is important?

Name: _____

LEED Checklist

Check the boxes next to the listed qualifications!

Sustainable Sites:



Alternative Transportation

Provides bike storage, public transit access, fuel efficient transit

Site Development

High ratio of open space to promote biodiversity

Rainwater Management

Reduced areas with materials that cannot absorb water or rainwater storage

Water Efficiency:



Water Use Reduction

Maximizes water efficiency in water fixtures i.e water efficient toilets, sinks

Energy and Atmosphere:



Optimize Energy Performance

Uses energy efficient light fixtures i.e. LED lights

Energy Metering

Tracks of energy use by using meters

Material Resources:



Recycling Program

Uses a recycling program on the premises

Recycled Content

Used building materials from other recycled content

Regional Materials

Used building materials that are produced from the region

Indoor Environmental Quality:



Good Ventilation

Clean air vents that promote good air circulation

Thermal Comfort

Provides a thermal environment that supports productivity and health of the occupants

Daylight and Views

Provided connection to outdoor spaces and light by using large windows for viewing areas

No Environmental Tobacco Smoke

Clean air to breathe