

Green Architecture

Grade 7

Lubeznik Center for the Arts February 23 – April 20

The **Green Architecture** exhibit at the Lubeznik Center for the Arts is an eclectic array of concepts which cross the curriculum to combine all aspects of grade level curriculum. In this experience, architecture becomes a creative integration of art, science, math, social studies and language arts that produce and develop the spaces and places that function to serve our needs. We need special places to live, work, learn, shop and be entertained; places that are not only practical and functional, but also inspirational.

With environmental issues are concerning our planet, many of us are becoming acutely aware of the necessity to be sensitive to our resources around us. Some of us are realizing that our resources are not unlimited and therefore need to be used more wisely. Many of us are becoming ‘**green**’. Recycling when we can, turning off lights when we leave a room, lowering thermostats in the winter are just a few of the ways that all of us make a difference.

Green Architecture shows extraordinary designs and construction of “**green**” projects that are within a 200 mile radius of the exhibit. The work in the show demonstrates ways that architects and designers have used alternative energy sources and the natural environment to create functional space and places without sacrificing interesting design. The exhibit is intended to inform and inspire visitors by offering an opportunity to view ‘green’ projects that are being built locally.

The exhibit is important for students, because it demonstrates how the sciences, the math, the social studies, the language arts and the visual arts that they study in school relate to and depend on one another to create the buildings that we use. They will experience how an architect uses their curriculum to create a useable building.

The Green Architecture programs are structured for each group and their specific requirements. Programs include a tour of the exhibit by knowledgeable staff and hands on experience of what it means to live green.

For more information and to schedule a class program, contact:

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Vocabulary:

Architecture (n) The art, science and practice of designing and building structures that serve our needs, such as houses, schools, office buildings, theatres etc.

The word “*architecture*” comes from the Latin word “*architectura*” and from the Greek “*arkitekton*” which means a master builder, chief builder or carpenter.

Architect (n) A person who designs buildings and advises in their construction. An architect uses mathematics, science, art, technology social sciences, politics and history to design structures for our use.

Green Architecture. (n) The design of spaces and places that respects the natural environment resources in our environment. The word “green” is used to describe something that is ecologically or environmentally friendly.

Natural resource. (n) Industrial materials and capacities such as mineral deposits, water power, and solar power supplied by nature that we use.

Conserve. (v) To keep in a safe or sound state. To avoid wasteful or destructive use of natural resources.

Recycle. (v) To pass through a series of changes or treatments. To process things such as glass, plastics and metals in order to make new things that we use.

Renewable Materials. (n) Natural materials that can be rapidly replaced in the environment such as fast growing trees, bamboo and agricultural products.

Renewable Energy. (n) Energy derived from sources that do not deplete natural resources such as solar power, wind power and geothermal energy.

Solar Energy. (n) Energy derived from the sun that we can use for our energy needs.

Geothermal Energy. (n) Energy derived from sources in the earth like steam or water power that we can use for energy.

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Web sites.

The following web sites are designed to show students how to become environmentally aware of global warming and how to “act green” in their daily lives.

Global Warming for Kids features “energy action” games, photos and downloads in four languages.

<http://globalwarmingkids.net>

Scholastic for Kids is a new offering from Scholastic. This site offers 100 days to act green and has printable (free) reminders for students to paste on faucets, bicycles and their parents’ bathroom mirrors.

<http://www.scholastic.com/actgreen/>

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Behavioral Objective:

Students attending the Green Architecture exhibit at the Lubeznik Center for the Arts will have the opportunity of seeing and understanding the thought process of how architects and designers create buildings and spaces for us to use that are functional and ecologically and environmentally responsible.

Learning Objectives:

Students will:

- 1) Learn what “green” means.
- 2) Learn the vocabulary of green architecture
- 3) Identify man-made and natural products used in green architecture
- 4) Create a list of things that they can do at home and at school to create a more “green” environment.
- 5) Design a house that is “green”

Measurable assessment:

(Pre-visit) Teachers will administer a pre test to ascertain the knowledge of students.

(Post –visit) Students will retake test. Using gained knowledge, students will be given guidelines for designing a “green” house. Students will draw their house for a class presentation. Students will write a story, using appropriate “green” vocabulary and display it in the classroom.

Additional activities:

Using other curriculum based standards, students will gain knowledge how science, math, language arts, social studies and the visual arts relate to each other to produce the ideas behind “green architecture”.

Language Arts

Standard 1: Reading: Word Recognition, Fluency and Vocabulary Development

7.1.2 Use knowledge of Greek, Latin and Anglo-Saxon roots and word parts to understand subject-area vocabulary (science, social studies and mathematics).

Standard 7: Listening and Speaking – Skills, Strategies and Applications

7.7.1 Ask questions to elicit information, including evidence to support the speaker’s claims and conclusions.

7.7.11 Create and deliver a persuasive presentation about your “Green Architecture” experience.

- state a clear position in support of an argument or proposal

- describe the points in support of the proposal and include supporting evidence

Math

Standard 4: Geometry - Students co-relate architecture and geometry by understanding plane and solid geometric shapes by constructing shapes that meet given conditions and by identifying attributes of shapes.

Standard 5: Measurement - Students compare units of measure and use similarity to solve problems. They compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less regular objects.

7.5.3 Read and create drawings made to scale, construct scale models and solve problems related to scale.

7.5.6 Use objects and geometry modeling tools to compute the surface of the faces and the volume of a three-dimensional object built from rectangular solids.

Example: Design and build a model of an apartment building with blocks. Find its volume and total surface area.

Science

Standard 1: Science and Technology

7.1.7 Explain how engineers, architects, and others engage in design and technology use scientific knowledge to solve practical problems.

Standard 3: The Physical Setting

7.3.14 Explain that energy in the form of heat is almost always one of the products of an energy trans-formation, such as in the examples of exploding stars, biological growth, the operation of machines and the motion of people.

7.3.15 Describe how electrical energy can be produced from a variety of energy sources and can be transformed into almost any other form of energy, such as light or heat.

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- 7.3.16 Recognize and explain that different ways of obtaining, transforming and distributing energy have different environmental consequences.

Standard 4: The Living Environment

- 7.4.14 Explain that the environment may contain dangerous levels of substances that are harmful to human beings. Understand, therefore that the good health of individuals requires monitoring the soil, air, and water as well as taking steps to keep them safe.

Social Studies

Standard 1: History

- 7.1.2 Describe the achievements of ancient Egypt in art, architecture, religion and government. Compare the achievements in architecture with those of the “Green Architecture” exhibit.

Standard 2: Civics and Government

- 7.2.5 Define and compare citizenship and the citizen’s role in selected countries of Africa, Asia and Southwest Pacific.
Example: Compare the styles of architecture and analyze why they built their buildings as they are.
- 7.2.6 Explain how African, Asian, and Southwest Pacific nations interact with each other.
Example: What are their policies on environmental issues and do they impact the economy of the nation.

Standard 3: Geography

- 7.3.1 Explain the role of Earth/sun relationship in influencing the climate and ecosystems of Asia, Africa and the Southwest Pacific. How do they compare with the climate of Northwest Indiana.
- 7.3.10 Describe the restriction that climate and land forms place on land use in regions of Africa, Asia and the Southwest Pacific, and be able to discern how patterns of population distribution reflect these restrictions. Compare this to a similar occurrence in Northwest Indiana.

Standard 5: Individuals, Society and Culture

- 7.5.9 Give examples of the benefits of connections among cultures, such as developing opportunities for trade, cooperating in seeking solutions to mutual problems, learning from technological advances, acquiring new perspective, and benefiting from developments in architecture, music and the arts.

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Visual Arts

Standard 1: Responding to Art

- 7.1.2 Research and compare works of art to identify similarities and differences in function or purpose.
Example: Compare a “Green Architectural” building to a similar building that was built in the 1970’s

Standard 8: Creating Art

- 7.8.1 Apply elements (line, shape, form, texture, color, value and space) and principles (repetition, variety, rhythm, proportion, movement, balance, emphasis and unity) in work that effectively communicates their ideas.
- 7.8.2 Identify and discriminate between types of shape, color, lines, textures, and space which include one and two-point perspective, balance, and the use of proportion, rhythm, variety, repetition and movement in their work and the works of others.

Standard 9:

- 7.9.2 Demonstrate appropriate use of different media, techniques and processes to communicate themes and ideas in their work including:
Drawing: Media – pencils, colored pencils, markers, ink, crayons, oil pastels, charcoals.
Processes- contour line, rendering, sketching, value, shading, crosshatching, stippling, one and two point perspective.
Sculpture/ ARCHITECTURE/Jewelry: Media- paper, papier-mâché, clay, plaster, fiber cardboard, wood paper, foil, found objects, beads, sand, balsa, wire, foam, copper, foam core.
Processes – carving, additive, subtractive, modeling, constructing.

Standard 11: Careers and Community – Students recognize a variety of art-related profession and careers in our society.

- 7.11.1 Identify a wide variety of professions related to art such as: fashion design, advertising, web design, interior design, ARCHITECTS
- 7.11.2 Identify skills needed to be an Architect, as well as other art-related professions.

Standard 12:

- 7.12.1 Identify contributions that ARCHITECTS and art-related professionals have made to society.

Standard 13: Integrated Studies – Students identify and make connections between knowledge and skill in art and all other subject areas such as humanities, sciences, and technology.

- 7.13.1 Compare similar themes, concepts, or time periods between art and other disciplines.

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Pre Test

Circle the answer that describes the word.

- 1) Architecture
 - a. a new video game
 - b. a set of blocks
 - c. buildings

- 2) Green
 - a. color
 - b. doing something for the first time
 - c. being friendly to the environment

- 3) recycle
 - a. to throw things away
 - b. to ride a bicycle
 - c. to use things again

- 4) Architect
 - a. an assistant to the principal
 - b. a person who designs buildings
 - c. a teacher

- 5) Natural Resource
 - a. water
 - b. plastic cup
 - c. cell phone