Fuller's Fantastic Geodesic Dome

This lesson was created as a supplement to the *Fuller's Fantastic Geodesic Dome* 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 *Fuller's Fantastic Geodesic Dome* program teaches fifth through ninth grade students about principles of engineering and design. Through studying geodesic domes, students are exposed to an innovative solution to the ongoing challenge of creating structures—how to maximize space while creating a strong, cost-effective, people-friendly structure. By studying the geodesic dome and its construction, students learn about materials, structures, and forces present in all buildings.

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.

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Red Line Metro, Judiciary Square

Geodesic Domes: Take A Closer Look

Now that you've been learning about geodesic domes and the forces at work in all structures, the following projects will help you investigate further.

Go to the Designer

Interview an architect or engineer about her/his work. How did s/he become interested in building structures? What does s/he build?

Innovative Architecture

Research an example of visionary design—a structure or object that uses geometry, physics, or materials in an innovative way. Consider what you like or dislike about the structure or object; how well it has stood the test of time; and the designer's methods of invention. Think about looking at one of these awe-inspiring designers:

- Leonardo da Vinci
- I. M. Pei: National Gallery of Art East Building and the Louvre Museum's pyramid
- Eiffel Tower: Iron trusses were previously used only in bridges
- Frank Lloyd Wright: The Solomon R. Guggenheim Museum and other structures with geometrical forms
- Parthenon and other Greek temples: Used geometric proportion for refinement and optical effect
- Frank Gehry: A modern architect who used materials in innovative ways

Creative Framing

Think of other ways space-framing can be used in buildings. Write an essay, draw a picture, or create a model of your new use for space-framing.

Redesign the World

Redesign a building of your choice using the architectural structures you just learned about. This could include creating a model or drawing of the building as it is now and how it will look with your new structure changes. Be sure to explain how your design is stronger or more effective than the previous one.