

BUILDING WITH THE SUN: NATURE & DESIGN

GRADE: 6-8

TIME: 60 minutes

This activity will introduce participants to the incorporation of the Sun and other natural elements in both historic and modern architecture. In a short research project, participants will consider the similarities and differences between a variety of historic and contemporary building types, how they relate to their culture or time period, and what considerations architects and designers might make to incorporate the natural world into their designs.

INTEGRATED SUBJECTS: Visual Art & Social Studies

OBJECTIVES

MATERIALS | RESOURCES

Images of historic & contemporary buildings:

Robie House, Chicago
Pantheon, Rome
Chichen Itza, Mexico
Fajada Butte, New Mexico
Stonehenge, England
Janta Mantar Solar Observatory, India
Temple of Abu Simbel, Egypt
Newgrange, Ireland
Chankillo, Peru
Petra, Jordan
Solstice on the Park, Chicago
Getty Research Library, Los Angeles
Masdar City, Abu Dhabi
Sanyo Solar Ark, Japan
"Sun Dial" Building, China.

1. Engage with the history of science, technology, and design.
2. Explore how different aspects of the natural world have been used by humans for practical purposes.
3. Consider how different cultures have used the sun in their architecture.
4. Postulate what influences architects to incorporate the natural world in their designs.

ESSENTIAL QUESTIONS

1. How can architecture be designed with the space and environment of its location in mind?
2. Does the Sun always affect design in the same ways? How has it changed over time?
3. How do architects make use of the natural world in their designs?

LESSON PROCEDURE

EXPLORE

5 minutes

- **Project or distribute interior images of Robie House, and introduce or recall ways Wright’s design incorporated natural motifs and fit within its environment (for a more in-depth consideration, refer to Shadow Patterns: Design and Earth’s Processes). Images are available at: <https://www.teachingbydesign.org/multimedia/>**
- **Ask:** Have you ever visited a building or interacted with a design that incorporates something from nature? How did it work?

RESEARCH & APPLY

45 minutes

- **Project or distribute examples of other historic and contemporary buildings that incorporate the Sun in their designs, but do not share any information about them.**
- **In a brief discussion, ask participants to compare and contrast the buildings with one another before assigning buildings to individual students to explore more deeply. Ask participants to consider possible answers on their own before researching to find facts.**
- **Ask:** Who designed the building, where is it located, and when was it built? What major shapes do you see that make up the building? How is the Sun or sunlight being used in this building? Does it inform the shape of the building or the way the building operates, or is it merely used for lighting? What elements of this culture (religion, mythology, etc.) might make the Sun important to that culture?

CRITIQUE & INTERPRET

10 minutes

- **Have participants share their findings and responses in short, informal presentations.**
- **As a class, ask students to discuss:**

Why do you think these different cultures all used the Sun and designed buildings with different astronomical features? Are there any common traits that link the ancient sites (use, shape, celestial feature)? Why do think this may be? How do modern and ancient buildings that use the Sun differ? How are they similar? Do you see any continuations or changes? Do you think that the way humans have built with the Sun has changed over time? Do you think modern architects have different concerns than architects in the past? Why or why not?
- **Finally consider:** How can architecture be designed with the space and environment of its location in mind? Does the Sun always affect design in the same ways? How has it changed over time? How do architects make use of the natural world in their designs?