



FRANK  
LLOYD  
WRIGHT  
TRUST

# SHADOW SHAPES

**GRADE:** K-3

**TIME:** Two 50-minute sessions

What role does light play in art and design? Frank Lloyd Wright carefully considered the role of both electric and natural light in his architectural designs. At the Frederick C. Robie House, leaded glass windows and custom electric light fixtures cast mesmerizing geometric shadows that change throughout the day and seasons. In this lesson, students will experiment with various opaque, transparent, and translucent materials as they study light and shadow. Students will learn how to manipulate shadows and will play with tracing various shadow shapes. Finally, they will use shadow tracing to create an original work of shadow shape art.

**INTEGRATED SUBJECTS:** Visual Arts, Science, Social-Emotional Learning

## OBJECTIVES

### MATERIALS | RESOURCES

Images of architecture and leaded glass windows designed by Frank Lloyd Wright  
Flashlights  
Examples of transparent, translucent, and opaque objects  
Paper  
Pencils  
Crayons, colored pencils, or markers (optional)  
Chalk (optional)

1. Explore the work of Frank Lloyd Wright and the importance of light as an architectural material.
2. Test how light interacts with various materials.
3. Understand the difference between "opaque," "translucent," and "transparent."
4. Learn how shadows are formed and manipulated.
5. Create a collaborative work of art.

## ESSENTIAL QUESTIONS

1. What role does light play in art and design?
2. How do various materials interact with light?

# LESSON PROCEDURE

## EXPLORE

### Session One

- **Introduce Frank Lloyd Wright and the field of architecture. Have students consider:** What materials do architects use in their designs? **Display an image of Frank Lloyd Wright’s Frederick C. Robie House and have students identify any materials that they see.**
- **Tell students that light is an important material in architecture. Have students consider:** What is light? **Challenge students to name sources of light, such as the sun or an electric light bulb. Use a dim room and a flashlight to demonstrate that light travels in a straight line.**
- **Have students consider:** How might light be an important element for architects to consider? How does light (or lack of light) impact one’s experience of a building? (Tip: Experiment by turning off the lights and/or closing any window blinds.)
- **Use images of Frank Lloyd Wright’s work to explain how the architect thoughtfully maximized the amount of light in his designs. Examples include siting buildings on the very northern edges of a lot (Nathan Moore House), placing exterior verandas and porches on the southern edge of a lot (Frederick C. Robie House, Peter Beachy House), designing wide bands of windows (Frederick C. Robie House), and designing electric light fixtures that are fully integrated into a room (Oak Park Home & Studio, Frederick C. Robie House).**

## ENGAGE

### Session One

- **Provide students with a flashlight and an assortment of objects, including opaque, translucent, and transparent materials.** (Tip: Have students work together in small groups!) **Have students make initial observations about the objects, listing their similarities and differences. Have students consider:** How does light interact with this object? Does light pass through the object? **Have students record observations before sharing with the class.**
- **Define terms “opaque,” “translucent,” and “transparent.” Use one of Frank Lloyd Wright’s art glass designs to demonstrate, challenging students to identify what elements of the design are opaque, translucent, and transparent.**
- **Have students use the terms to categorize the objects that they have observed.**

## EXPLORE

### Session Two

- **Review Frank Lloyd Wright, light, and how light interacts with materials.**
- **Show students the “Art Glass Shadows” video of the Frederick C. Robie House, located here: <https://www.teachingbydesign.org/multimedia/>. Have students consider:** What and where is the light source in this video? How does light interact with the building?
- **Explain how shadows are created when an object blocks a light source.**

## ENGAGE

### Session Two

- **In small groups, have students use a flashlight, an assortment of objects, and a blank sheet of paper to create shadows. Have students consider:** How do opacity, transparency, and translucency affect the presence and quality of a shadow?
- **Challenge students to manipulate the size of the shadows. Have students consider:** How are shadows manipulated? **Note how the proximity of the light source affects the shadow’s size.**
- **Rewatch the “Art Glass Shadows” video and challenge students to hypothesize why the size of the shadows changes over time. Ask students:** What interesting shapes are cast and how do they impact the room?

# LESSON PROCEDURE

## DESIGN

Session Two

- **Have students experiment with casting various shadow shapes onto a blank piece of paper. Have students trace any shadows that they find particularly interesting, taking note of what object or combination of objects created the shadow. Encourage students to experiment with various objects around the classroom.**
- **Challenge students to create a work of art by tracing shadow shapes.**
  - ◇ Differentiation: Tell students that the artwork must feature a building or a geometric pattern.
  - ◇ Optional Extension: Once the general forms are traced, have students add color to their artwork.
  - ◇ Differentiation: Have students produce their shadow art on a sidewalk or school pavement using chalk.

## CRITIQUE & INTERPRET

Session Two

- **Have students present their shadow art, highlighting what objects were used to create various forms and shapes. Challenge students to explain how they manipulated the size of the shadows in their designs.**