

Geometric Landscapes
Suggested Grades: 2 through 5
Lesson by: Meagan McCormick

(Be sure to contact the Castellani Art Museum for a copy of the teacher resource guide containing the images, activities, and additional information associated with this lesson plan.)

Disciplines: NYS Learning Standards

◆ The Arts- Visual Arts

Standard 1: Creating, Performing, and Participating in the Arts

Performance Indicator (1): Students will make works of art that different kinds of subject matter, topics, themes, and metaphors. Students will understand and use sensory elements, organizational principles, and expressive images to communicate their own ideas in works of art. Students will use a variety of art materials processes, mediums, and techniques, and use appropriate technologies for creating and exhibiting visual art works.

Standard 2: Knowing and Using Arts Materials and Resources

Performance Indicator (2): Students will know and use a variety of visual arts materials, techniques, and processes. Students will know about resources and opportunities for participation in visual arts in the community (exhibitions, libraries, museums, galleries) and use appropriate materials (art reproductions, slides, print materials, electronic media). Students will be aware of vocational options available in the visual arts.

Standard 3: Responding to and analyzing Works of Art

Performance Indicator (3): Students will reflect on, interpret, and evaluate works of art, using the language of art criticism. Students will analyze the visual art characteristics of the natural and built environment and explain the social, cultural, psychological, and environmental dimensions of the visual arts. Students will compare the way in which a variety of ideas, themes, and concepts are expressed in other disciplines.

◆ Mathematics

Standard 1: Analysis, Inquiry, and Design

Performance Indicator: Mathematical Analysis:

(1) Abstraction and symbolic representation are used to communicate mathematically.

(3) Critical thinking skills are used in the solution of mathematical problems

Performance Indicator: Engineering Design:

(1) Engineering Design is an iterative process involving modeling and optimization finding the best solution within given constraints which is used to develop technological solutions to problems within given constraints.

Standard 3: Mathematics

Performance Indicator: Mathematical Reasoning:

(1) Students use mathematical reasoning to analyze mathematical situations, make conjectures, gather evidence, and construct an argument.

(4) Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.

Descriptive Title: Geometric Landscapes

Context (Rationale):

This lesson is important to teach children that studying mathematics is not just learning about numbers but understanding the important part that it plays in everyday life. Mathematics surrounds us and influences much of what we do. While we usually think of numerical operations and calculations as a part of mathematics, there is another element. We can see mathematics all around us, in man-made objects as well as our natural environment. Everything that is visible has shape and form. Most man-made objects are built a particular way to serve an important purpose. Understanding the connection between form and function is an important part of the study of geometry. After studying various landscape/architectural paintings students should be able to identify geometric shapes and explain/discuss why they were used.

Performance Task:

The student will be able to:

- List different geometric shapes
- Identify different geometric shapes found in the paintings
- Discuss why specific shapes may have been used
- Identify geometric shapes in their immediate surroundings
- Create own building using a variety of geometric shapes and be able to justify their use of those particular shapes

Art Resources:

- The White House 1920, Maurice Utrillo, Castellani Art Museum
- General Mills and Lake Freighter 1947, Arthur Harold Lindberg, Castellani Art Museum
- Great Lakes Dredge and Dock Co., Buffalo River 1948
- Visual presentation of geometric shapes and definitions

Art Materials:

- Glue bottles
- Squares of cardboard (to use as foundation of structure)
- Multiple geometric shapes cut out of cardboard in a variety of sizes
- Scissors
- Markers

Motivation:

The teacher will motivate the students by asking them to describe what they learn in math class. Realizing that their first answers will probably involve mathematical operations such as adding, subtracting, multiplying, and dividing, the teacher will then ask them if they realize that

they can see math all around them. The teacher will remind them that studying shapes and forms, geometry, is a part of mathematics. At that point the teacher may ask them to look around the room and see if they can find specific shapes and identify them with their proper names. The teacher will then tell them that they will look at several paintings and try to identify as many geometric shapes as possible.

Presentation:

1. Once the children arrive at the museum the teacher will bring them into the gallery where the paintings are displayed.
2. The teacher will ask the students to describe what they see when they look at the paintings. Do they see a connection with all of the paintings?
3. Based on student responses the teacher will describe each painting in further detail giving background information.
4. Using a visual of the different geometric shapes and definitions the teacher will have students pick out or identify where the shapes are found in the paintings.
5. For each painting the teacher will ask the students why they think those particular shapes were used.
6. The teacher will also ask them why they think the shapes vary in size.
7. Looking at each painting the teacher will ask the students how they might have used different shapes to improve the building(s).
8. Next the teacher will tell them that they will create their own building using geometric shapes. The building must be functional and students must be able to explain why the building has been constructed a certain way.

Assessment Tools and Evidence:

Tools: At the end of the session the teacher will ask students to volunteer to share their building with the rest of the class describing what they have constructed and why. The teacher will also ask students identify the geometric shapes that they used.

Evidence: The evidence of whether or not the students understood the use and function of geometric shapes will be determined by their buildings and their explanations.

Teacher Reflection/Follow Up: Did the students understand the use and function of geometric shapes? Do they understand the role that geometry plays in our everyday life? The teacher will make decisions based on their building constructions and their explanations as well as feedback from the classroom teacher.