



Young
Audiences
Arts for
Learning

Houston

Lesson Plan

Cave Paintings of Altamira

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**Residency Visit
Grades K-8**

OVERVIEW

Students will learn about physical properties of matter and how to describe matter through exploring different types of drawing media. Students will also learn about how lines create shapes and how these elements influence an image through studying the cave paintings of Altamira. Students will then explore how to create their own stylized images using specific drawing techniques.

AGENDA (50-minute class period)

Opening warm-up (5 minutes)

Introduce lesson (5 minutes)

Art concepts

Art history context

Practice using materials (5 minutes)

Main assignment (30 minutes)

Clean-up (5 minutes)

LEARNING OBJECTIVES

Science

Students will be able to:

K-2 Observe and classify objects by different physical properties

3-5 Describe, classify, and compare matter based on physical properties

6-8 Describe, classify, and compare matter based on physical properties at a molecular level

Arts

Students will be able to:

K-2 Show an understanding of the use of lines and shapes to create images

3-5 Discuss elements and principles of art using proper vocabulary

CLASSROOM MATERIALS

Here is a list of materials for all the different types of activities suggested. Not all of these materials may be needed or even available at the school. Please see the **Procedure** section for more details regarding the activities.

1. Paper/drawing surface
 - Manila paper
 - Newspaper on cardboard
 - Kraft paper
 - Broken ceiling tile
 - Brown paper sacks
 - Brown construction paper
 - Medium-sized flat rock (have students bring one from home)
2. Drawing media
 - Charcoal
 - Oil pastels
 - Water
 - Brushes
 - Tempera paint
 - Crayons
 - Watercolor paint
 - Chalk pastels
3. Other materials
 - Brushes
 - White glue
 - Iron
 - Animal figurines
 - Plaster of Paris
 - Photos of major art figures from the Cave of Altamira
OR video: <https://www.youtube.com/watch?v=HmD6Lo9-l3s>

PREPARATION

1. If time/materials allow:
 - Prepare **manila paper** by painting it brown with tempera paint, then rinsing it to give it a crinkled look
 - Prepare **cardboard and newspaper** by gluing pieces of newspaper to cardboard using watered-down white glue to give it texture
 - Prepare **ceiling tile** by covering the surface with Plaster of Paris to make a rocky surface
2. Set out materials on tables beforehand (including informal pre-class evaluation)
3. Web access

ACADEMIC VOCABULARY & CONCEPTS

Science

K-2: Describing objects

Matter	Everything in the universe that takes up space; everything that you can see, feel, taste, or touch.
Property	Something about matter that you can measure or observe with your senses; eg: size, weight, shape, color, texture, mass, volume
Texture	The way the surface of something feels
Mass	The amount of matter or stuff that an object is made of
Volume	The amount of space an object takes up
Solid	Matter that has its own shape
Liquid	Matter that takes the shape of whatever holds it
Gas	Matter that takes the size and shape of what holds it
Mixture	Something made of two or more things with different properties that can be separated
Observe	To use one or more of the senses to find out about objects, events, or living things
Describe	To represent or give an account in words; to represent by a figure, model, or picture
Classify	To group by characteristics, similarities, and differences; to organize by groupings
Compare	To examine things to find out how they are alike and/or different

3-5: Describing matter

Solution	A mixture of a solid, liquid, or gas (solute) in a liquid (solvent) where the solute is smoothly spread throughout the solvent
Solubility	How well something spreads through a liquid
Physical change	A change in matter in which no new substance is produced; usually a change from one state to another, and can be reversed
Phase change	The physical change of a substance due to a change in energy of the molecules that make up the substance; this is usually caused by a change in temperature or pressure
Solids vs. Liquids vs. Gases	Solids have a fixed shape and volume; liquids have a fixed volume; gases have no fixed shape or volume
Mixture vs. solution	A solution is a specific type of mixture where both components are smoothly mixed together so that it looks the same throughout

6-8: Describing matter at a molecular level

Metals	
Nonmetals	
Metalloids	
Luster	
Hardness	

Atoms	
Molecules	
Motion of atoms	
Analyze	To study or determine the relationship of the parts of something

Arts

K-2: Lines and shapes

Color	Light reflected off of objects.
Texture	The surface quality that can be seen and felt. Textures can be rough or smooth, soft or hard. Textures do not always feel the way they look; for example, a drawing of a porcupine may look prickly, but if you touch the drawing, the paper is still smooth.
Form	Three-dimensional shapes expressing length, width, and depth. Balls, cylinders, boxes, and pyramids are forms
Line	A mark with greater length than width. Lines can be horizontal, vertical, or diagonal; straight or curved; thick or thin.
Shape	A closed line. Shapes can be geometric, like squares and circles; or organic, like free-form or natural shapes. Shapes are flat and can express length and width.
Pattern	The repeating of an object or symbol all over the work of art.
Space	The area between and around objects. The space around objects is often called negative space; negative space has shape. Space can also refer to the feeling of depth. Real space is three-dimensional; in visual art, when we create the feeling or illusion of depth, we call it space.
Emphasis	The part of the design that catches the viewer's attention. Usually the artist will make one area stand out by contrasting it with other areas. The area could be different in size, color, texture, shape, etc.
Elements of art	The building blocks used by artists to create a work of art.
Principles of art	Ways that artists use the elements of art in a work of art.
Nature-made	
Human-made	

3-5: Elements and principles of art

Hue	The name of the color, such as red, green, blue, etc.
Value	How light or dark a color or shade is
Intensity	How bright or dull a color is
Rhythm	When one or more elements of design are used repeatedly to create a feeling of organized movement. Rhythm creates a mood like music or dancing. To keep rhythm exciting and active, variety is essential
Balance	The distribution of the visual weight of objects, colors, texture, and space. If the design was a scale, these elements should be

	balanced to make a design feel stable. In symmetrical balance, the elements used on one side of the design are similar to those on the other side; in asymmetrical balance, the sides are different but still look balanced. In radial balance, the elements are arranged around a central point and may be similar.
Proportion	The feeling of unity created when all parts (sizes, amounts, or number) relate well with each other. When drawing the human figure, proportion can refer to the size of the head compared to the rest of the body.
Unity	The feeling of harmony between all parts of the work of art, which creates a sense of completeness.
Movement	The path the viewer's eye takes through the work of art, often to focal areas. Such movement can be directed along lines, edges, shape, and color within the work of art.
Variety	The use of several elements of design to hold the viewer's attention and to guide the viewer's eye through and around the work of art.
Organizers	
Composition	

PROCEDURE

Warm-Up (5 minutes)

1. Have students warm up by trying out the different drawing media at their table
2. After 3 minutes, ask students to continue exploring different media but also start describing out loud what it's like to use the media. Write the words on the board.
 - a. If students don't know how to begin, prompt with questions
 - i. K-2: How does it feel to hold it? What shape is it?
 - ii. 3-5: What state is it? Is it a mixture or solution?
 - iii. 6-8: What type of substance do you think it is?
 - b. As you go through the different media, ask students to compare them
 - i. K-2: Which one is softer or harder than another? Which one is darker or lighter?
 - ii. 3-5: Which one do you think would float in water? Why?
 - iii. 6-8: Which one has the highest hardness? Which one has more energy? How can you tell?

Lecture (5 minutes)

3. Show students pictures of paintings in the Cave of Altamira, or show the video showcasing the paintings.
 - a. Point out basic aspects of each picture—what is this painting of? What else is in the picture?
4. Discuss the images of the animals
 - a. Do they look like real bison? What's similar? What's different?
 - b. What colors are used? How are they colored?
 - c. Describe the lines—are they straight or curved? Which ones are straight and which ones are curved?
5. Discuss the significance of the images

- a. What do you think the cavemen were trying to say by painting these animals on the ceiling of the cave?
 - b. What does it mean for modern art historians?
6. Crush some chalk pastels and mix the powder into water. Explain that you are creating a *solution* of chalk pastels and water (a solid mixed in with a liquid). Also include that this was most likely how the painters of the Cave of Altamira created their own paint

Practice (5 minutes)

Main Assignment (30 minutes)

Here is a list of ideas for activities depending on the availability of materials:

Instructions on how to conduct the lesson

Activities differentiated by grade level

Includes activities based on materials availability

Clean-up (5 minutes)

EVALUATIONS

Informal pre- and post-evaluation of student achievement

CLASSROOM EXTENSIONS

Activities to further incorporate art into other learning areas outside of the residency visit

STANDARDS ADDRESSED

Grade	Science	Visual Art	Students will...
K	K.5A	K.1B	<p>SCI: Observe and record properties of objects, including relative size and mass, such as bigger or smaller and heavier or lighter, shape, color, and texture.</p> <p>ART: Identify the colors, textures, forms, lines, shapes and patterns that are natural or human-made.</p>
1	1.5A	1.1B	<p>SCI: Classify objects by observable properties of the materials from which they are made such as larger and smaller, heavier and lighter, shape, color, and texture.</p> <p>ART: Identify the following elements and principles of art: color, texture, form, space, line, shape, pattern and emphasis in nature and in the human-made environment.</p>

2	2.5A	2.1B	<p>SCI: Classify matter by physical properties, including shape, relative mass, relative temperature, texture, flexibility, and whether material is a solid or liquid.</p> <p>ART: Demonstrate an understanding of the following elements and principles of art: color, texture, form, space, line, shape, pattern and emphasis in nature and in the human- made environment.</p>
3	3.5B	3.1B	<p>SCI: Describe and classify samples of matter as solids, liquids, and gases and demonstrate that solids have a definite shape and that liquids and gases take the shape of their container.</p> <p>ART: Choose appropriate vocabulary to discuss the use of elements and principles of art that include, emphasis, pattern, rhythm, balance, proportion, unity, movement and harmony.</p>
4	4.5C	4.1B	<p>SCI: Compare and contrast a variety of mixtures and solutions such as rocks in sand, sand in water, or sugar in water</p> <p>ART: Identify in artworks that color, texture, form, line, shape, space and value are basic art elements and that the art principles of emphasis, pattern, rhythm, balance, proportion, unity, movement, harmony and variety serve as organizers</p>
5	5.5A, 5.5D	5.1B	<p>SCI: Classify matter based on physical properties, including mass, magnetism, physical state solid, liquid, and gas, relative density sinking and floating, solubility in water.</p> <p>Identify changes that can occur in the physical properties of the ingredients of solutions such as dissolving salt in water or adding lemon juice to water.</p> <p>ART: Express an awareness that the elements and principles of art serve as a foundation to cohesively organize a work of art.</p>
6	6.6A	6.1B, 6.2C	<p>SCI: Compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity or malleability</p> <p>ART: Analyze and form generalizations about the interdependence of the art elements such as color, texture, form, line, space, and value and principles</p>

			<p>such as emphasis, pattern, rhythm, balance, proportion, and unity, using art vocabulary appropriately.</p> <p>Demonstrate technical skills effectively, using a variety of art media and materials to produce designs, drawings, paintings, and prints.</p>
7		7.2C	ART: Produce drawings, paintings, and prints using a variety of art materials and tools in traditional and experimental ways
8		8.2C	ART: Select appropriate art materials and tools to interpret subjects or themes when producing drawings, paintings, and prints
IPC	IPC.6A		SCI: Examine differences in physical properties of solids, liquids and gases as explained by the arrangement and motion of atoms, ions or molecules of the substances and the strength of the forces of attraction between those particles

RESOURCES