

Science in Art (Grades 6-12)

LESSON DESCRIPTION:

Find out how artists use science to create and conserve works of art. From observational drawings to restoration techniques, students will link their scientific knowledge with the world of art.

STATE STANDARDS:

Sixth Grade

- **SCIENCE-Standard 6.S.1:** The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.
 - 6.S.1A.1 Ask questions to (1) generate hypotheses for scientific investigations, (2) refine models, explanations, or designs, or (3) extend the results of investigations or challenge claims.

Seventh Grade

- **SCIENCE-Standard 7.S.1:** The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.
 - 7.S.1A.1 Ask questions to (1) generate hypotheses for scientific investigations, (2) refine models, explanations, or designs, or (3) extend the results of investigations or challenge claims.
- **SCIENCE-Standard 7.P.2:** The student will demonstrate an understanding of the structure and properties of matter and that matter is conserved as it undergoes changes.
 - 7.P.2B.1 Analyze and interpret data to describe substances using physical properties (including state, boiling/melting point, density, conductivity, color, hardness, and magnetic properties) and chemical properties (the ability to burn or rust).
 - 7.P.2B.3 Analyze and interpret data to compare the physical properties, chemical properties (neutralization to form a salt, reaction with metals), and pH of various solutions and classify solutions as acids or bases.
 - 7.P.2B.4 Plan and conduct controlled scientific investigations to answer questions about how physical and chemical changes affect the properties of different substances.

Eighth Grade

- **SCIENCE-Standard 8.S.1:** The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

- 8.S.1A.1 Ask questions to (1) generate hypotheses for scientific investigations, (2) refine models, explanations, or designs, or (3) extend the results of investigations or challenge claims.
- **SCIENCE-Standard 8.P.3:** The student will demonstrate an understanding of the properties and behaviors of waves.
 - 8.P.3A.3 Analyze and interpret data to describe the behavior of waves (including refraction, reflection, transmission, and absorption) as they interact with various materials.
 - 8.P.3A.5 Construct explanations for how humans see color as a result of the transmission, absorption, and reflection of light waves by various materials.
 - 8.P.3A.6 Obtain and communicate information about how various instruments are used to extend human senses by transmitting and detecting waves (such as radio, television, cell phones, and wireless computer networks) to exemplify how technological advancements and designs meet human needs.

High School

- **SCIENCE-Standard H.C.1:** The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.
 - H.C.1A.1 Ask questions to (1) generate hypotheses for scientific investigations, (2) refine models, explanations, or designs, or (3) extend the results of investigations or challenge scientific arguments or claims.
 - H.C.1A.3 Plan and conduct controlled scientific investigations to answer questions, test hypotheses, and develop explanations: (1) formulate scientific questions and testable hypotheses based on credible scientific information, (2) identify materials, procedures, and variables, (3) use appropriate laboratory equipment, technology, and techniques to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

SC VISUAL ARTS STANDARDS:

Sixth Grade:

- VA6-1.1 Identify the materials, techniques, and processes used in a variety of artworks.
- VA6-1.4 Use art materials and tools in a safe and responsible manner.
- VA6-6.2 Compare and contrast concepts, issues, and themes in the visual arts and other subjects in the school curriculum.
- VA6-6.3 Identify specific visual arts careers and describe the knowledge and skills that one needs for these careers.

Seventh Grade:

- VA7-1.1 Identify the materials, techniques, and processes used in a variety of artworks.
- VA7-1.4 Use art materials and tools in a safe and responsible manner.
- VA7-6.2 Compare and contrast concepts, issues, and themes in the visual arts and other subjects in the school curriculum.
- VA7-6.3 Identify specific visual arts careers and describe the knowledge and skills that one needs for these careers.

Eighth Grade:

- VA8-1.1 Identify the materials, techniques, and processes used in a variety of artworks.
- VA8-1.4 Use art materials and tools in a safe and responsible manner.
- VA8-6.2 Compare and contrast concepts, issues, and themes in the visual arts and other subjects in the school curriculum.
- VA8-6.3 Identify specific visual arts careers and describe the knowledge and skills that one needs for these careers.

High School:

- VAH-1.1 Recognize and analyze the similarities and differences among the materials, techniques, and processes in works of visual art.
- VAH-1.5 Use a variety of art materials, tools, and equipment in a skillful, safe, and responsible manner.
- VAH1-6.2 Compare and contrast concepts, issues, and themes in the visual arts and other subjects in the school curriculum.
- VAH1-6.3 Identify specific visual arts careers and describe the knowledge and skills that one needs for these careers.