

Essential Questions:

How do people use art to expand their knowledge of the world around them?
How do images influence our views of the world?

**Visual Art Standards:****1. Creating, Performing and Participating in the Arts**
Commencement:

VA.1.C.d - reflect on their developing work to determine the effectiveness of selected mediums and techniques for conveying meaning and adjust their decisions accordingly.

2. Knowing and Using Arts Materials and Resources
Commencement:

VA.2.C.d - understand a broad range of vocations/avocations in the field of visual arts involved in creating, performing, exhibiting, and promoting art.

3. Responding to and Analyzing Works of Art
Commencement:

VA.3.C.b - explain the visual and other sensory qualities in art and nature and their relation to the social environment

NATIONAL CORE VISUAL ART STANDARDS**CREATING****Anchor Standard 3:** Refine and complete artistic work.

VA:Cr3.1.Ia - Apply relevant criteria from traditional and contemporary cultural contexts to examine, reflect on, and plan revisions for works of art and design in progress.

VA:Cr.3.1.IIa - Engage in constructive critique with peers, then reflect on, reengage, revise, and refine works of art and design in response to personal artistic vision.

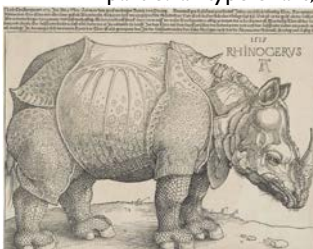
VA:Cr3.1.IIa - Reflect on, reengage, revise, and refine works of art or design considering relevant traditional and contemporary criteria as well as personal artistic vision.

RESPONDING**Anchor Standard 7** - Perceive and analyze artistic work.

VA:Re.7.2.Ia - Analyze how one's understanding of the world is affected by experiencing visual imagery.

VA:Re.7.2.IIa - Evaluate the effectiveness of an image or images to influence ideas, feelings, and behaviors of specific audiences.

VA:Re.7.2.IIIa - Determine the commonalities within a group of artists or visual images attributed to a particular type of art, timeframe, or culture.

**Common Core Standards:**READING STANDARDS for Literacy in Science and Technical Subjects

1. Read closely to determine what the text (artwork) says explicitly and to make logical inferences from it. cite specific textual evidence when writing or speaking to support conclusions drawn from the text (artwork).

RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

6. Assess how point of view or purpose shapes the context and style of a text (artwork).

RST.9-10.6 Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.

WRITING STANDARDS for Literacy in Science and Technical Subjects

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

WST.9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.

WST.11-12.8: Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

SPEAKING AND LISTENING STANDARDS

SL.9-10.4 - Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

Acquisition Objective(s): <small>What knowledge and skills are students to acquire?</small>	<ul style="list-style-type: none"> • Students will be able to compare and contrast Botanical and Medical Illustrator job responsibilities and skills. • Students will classify artists with the subjects, images, and methods they used to create their illustrations. • Students will be able to identify, at least, three illustrators and identify their illustrations.
Application Objective(s): <small>How will students apply new knowledge and skills?</small>	<ul style="list-style-type: none"> • Students will create an accurate representation of a plant, or part of the plant, in plaster • Alternative options for representation could include colored pencil, pen and ink, watercolor, or photography. • Students will use the internet or books to research and identify the scientific and common name of the plant or animal they represented.
Assimilation Objective(s): <small>How will students synthesize what they learned?</small>	<ul style="list-style-type: none"> • Students will deduce why accuracy is important in scientific illustrations, like those of the artists presented in this unit, and explain and provide examples of the impact that the inaccuracies could cause. • Compare and contrast the a drawing of a sea creature from an ancient map to photos of the actual animal or fish it purports to be; share your findings.
Adaptation Objective(s): <small>How will students take what they learned and apply it to new situations and across disciplines?</small>	<ul style="list-style-type: none"> • Students will use artistic techniques to accurately record information in science related courses like <i>Living Environment</i> and <i>Anatomy</i>. • Students may use their knowledge of scientific illustration to choose a career.

Learning Supplies & Materials:

Video: Natural Histories: Scientific Illustration on Display

Graphic Organizer - Botanical & Medical Illustrator Venn Diagram

- Video: Cool Jobs / Profile Botanical Illustrator Catherine Wardrop
- Video: Inside the world of medical illustration with Mt. Airy artist Birck Cox

Prints of plant and animal illustrations
 Photographs of plant and animals
 Specifically: Print of Durer's rhinoceros and photo of rhinoceros

Images from <http://www.strangescience.net/stsea2.htm>

- Plant pieces
- Leaves
- Wax Paper
- News Paper
- Scissors
- Plaster
- Water container
- Warm water
- Colored pencils
- Water colors



Resources:

Natural Histories: Scientific Illustration on Display
<https://www.youtube.com/watch?v=5AwGIVqKOKU#t=215>

Robert Hooke's illustrations(primary source) -
<http://archive.nlm.nih.gov/proj/tftp/flash/hooke/hooke.html>

Zoology of the Voyage of the HMS Beagle - Charles Darwin - view illustrations at
http://darwin-online.org.uk/graphics/Zoology_Illustrations.html

Marcus Bloch's illustrations (primary source)
<https://archive.org/details/dmarcuselieserbl00bloc>

Maria Sibylla Merian's illustrations (primary source)
<https://archive.org/details/Metamorphosisin00Meri>

John James Audubon: <http://education.audubon.org/>

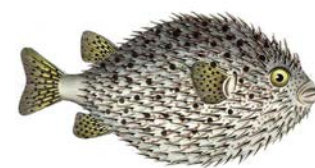
Albrecht Durer's illustrations:
<http://www.albrecht-durer.org/Rhinoceros.html>


Looking at Animals in Human History by Linda Kalof (p. 72) Durer's illustration of rhinoceros is wrong, based only on description.

Sea Monsters:
<http://www.strangescience.net/stsea2.htm>
<http://www.smithsonianmag.com/science-nature/the-enchanting-sea-monsters-on-medieval-maps-1805646/?no-ist>
<http://www.wired.com/2013/10/here-be-sea-monsters/>

Botanical Illustrator Career:
<http://www.abc.net.au/acedayjobs/cooljobs/profiles/s2296870.htm>

Medical Illustration Career:
<http://www.newsworks.org/index.php/local/the-pulse/63194-inside-the-world-of-medical-illustration-with-mt-airy-artist-birck-cox->



	Direct Instruction	Guided Practice	Independent Practice	Formative Assessment
Acquisition - Lesson(s) How will your students acquire knowledge and skills?	Thinking process - investigation Students will watch <i>Natural Histories: Scientific Illustration on Display</i> Take notes on purpose of scientific illustration Why, who, what... Students will watch Video: <i>Cool Jobs / Profile Botanical Illustrator Catherine Wardrop and Inside the world of medical illustration with Mt. Airy artist Birck Cox</i>	Discuss as a class: <ul style="list-style-type: none"> Video <i>Natural Histories: why, who, what.</i> In pairs, complete Venn diagram comparing Botanical and Medical Illustrator. Share with class. Demonstrate how to research to find primary sources for illustrators Hooke, Bloch, Merian, and Audubon. Locate information and print an image.	Using a graphic organizer, students will classify artists with the subjects, images, and methods they used to create their illustrations. <ul style="list-style-type: none"> identify the artist, genre, title of work, date, and method used to create the illustration. In addition, identify unique characteristics of the work which make the artists' work identifiable. 	Exit ticket <ul style="list-style-type: none"> Match the illustrator with their illustration. Explain the purpose of Scientific illustrations of plants and animals.
Application Lessons(s) How will you help students apply new knowledge and skills?	Demonstrate how to create a plaster cast of a plant. Color and painting techniques. Demonstrate pen and ink techniques for illustrating plants and animals. Demonstrate the use of watercolor or colored pencil to color the drawings. How to research the animal and/or plant's scientific and common name. Demonstrate how to find, type, size, and trace the scientific and common name of the plant/animal on finished drawing or painting.	Conduct internet research to identify the plant's scientific and common name. Create a plaster cast of a plant. Create thumbnail size drawing of a plant or animal using pen and ink. Create thumbnail size drawing of a plant or animal using colored pencil. Create a thumbnail size painting of a plant using watercolor wash and wet-in-wet. or wash and wet-in-wet	Create a plaster cast of a plant. Create a finished drawing or painting of a plant or animal using pen and ink, colored pencil, and/or watercolor. Include the scientific and common name.  <p><i>Impatiens Wallerana</i></p>	<ul style="list-style-type: none"> Monitor students use of the internet and ability to find reliable and credible sources. Monitor students' process of creating a plaster cast. Ask individuals and small groups questions regarding the process. Ask students to share their plan for how they will color their plaster cast and why they have chosen that method. Students should provide examples of their practice using those mediums.
Assimilation(s) How will you help students synthesize what they learned?	How to compare and contrast two images using the "close reading" method. How to search for reliable information. How to determine credible sources.	Class discussion: <ul style="list-style-type: none"> Compare and contrast Durer's illustration of a rhinoceros and photograph of one, to generate a list of accurate and inaccurate details. 	Using an image of a "sea monster" from an ancient map. Determine what the creature was based on, in reality. Compare and contrast the drawing to photos of the actual animal or fish. Create a map of a real or imaginary land. Include your own sea and/or land monsters. Those monsters should be a combination of imagination and reality. Paint with watercolors. Finish with pen and ink.	<ul style="list-style-type: none"> Monitor students' ability to find reliable and credible sources. During the research process, ask students, independently or in small groups, to explain what they have discovered, things that they have noticed, areas that they need to learn more about, etc. Research (info and images) from "sea monster" activity.

	Direct Instruction	Guided Practice	Independent Practice	Formative Assessment
Adaptation How will you help students take what they learned and apply it to new situations and across disciplines?	Discussion: how could you use your artistic skills help you in other disciplines?	Watch and discuss a video on a Botanical Artist and another on a Medical Illustrator. What skills did they use to ensure accuracy, that you could too?	Use artistic skills in Living Environment, Anatomy, and other classes to record information accurately.	Exit ticket... How will you use your artistic skills outside the art room?
Summative Assessment: Finished drawing or painting of a plant or animal with scientific and common name included. <ul style="list-style-type: none"> • Use Likert-type scale (1-5) to assess competence in craftsmanship, composition, technical skill in medium, observation Ancient Map of imaginary animals and plants based on research of real creatures. <ul style="list-style-type: none"> • Use Likert-type scale (1-5) to assess competence in craftsmanship, composition, technical skill, observation, creativity 				

Venn Diagram comparing Botanical and Medical Illustrator Skills and Knowledge

