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***How Storms Happen***

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Grade Level: 6–7

Related Big Picture Concepts: Force, Impact, Cycle

Subject Areas: Science, Visual Arts

Duration: two to three 45-minute sessions

Essential Question: *What causes weather and storms?*

Abstract: Students investigate how artists observe and depict the weather in the open sea and research the factors that create weather. They take notes and make lists. Small-group work is followed by a whole-class discussion on various types of weather and how weather can be traced to the sun. Students create a work of art demonstrating comprehension and observation of weather and water cycles.

Focus Works of Art:



Ludolf Backhuysen  
Dutch  
1630–1708  
***Ships in a Stormy Sea off a Coast***  
circa 1700–1705  
Oil on canvas  
59 3/8 x 91 1/8 in. (150.8 x 231.5 cm)  
<http://artnc.org/node/359>

North Carolina Standards Correlations

Visual Arts: 6.V.1.1, 6.V.1.3, 6.V.1.4, 6.V.2.2, 6.V.2.3, 6.V.3.1, 6.V.3.3, 6.CX.2.2,

Science: 7.E.1.2, 7.E.1.3, 7.E.1.4, 7.E.1.5, 7.E.1.6

# Student Learning Objectives

# · Students analyze and research how artists have painted storms throughout history. · Students investigate weather and water cycles. · Students collect and compile data on the interconnectedness of weather and water cycles as well as the influence of convection. · Students work in collaborative groups to create their own weather and water cycle posters and paintings.

# Activities

# Introduce the topic of thunderstorms using the focus work of art. Ask students to make observations about thunderstorms based on the artist’s representation. Sample questions: *Look intently at this work of art for two minutes, and take in any and all details that make it interesting and memorable. At the end of two minutes, we will close our eyes and recall all the details. (Teacher sets a timer.)* *Why did the artist choose to portray the ships on a stormy sea rather than in calm waters? What effect does that have on the viewer?* *How did the artist capture this natural phenomenon in the painting? Think in terms of the way the artist used colors and shapes.* *How do storms start; why do they happen?* Students focus on the work of art while brainstorming the factors that bring forth storms. For the experiment, the teacher can use a hot plate to boil a pan of water and then hold the cold lid over the pan to demonstrate the three steps of the water cycle: evaporation, condensation, and precipitation. The cold lid causing the warm mist to turn into water droplets also displays heat transfer via convection. As a group, discuss how and with what techniques/materials artists might represent characteristics of water.

# Explore how weather and the water cycle are related. Have students research what causes weather. In keeping with this topic, have students also research how artists have painted storms throughout history. Once the data is collected, the groups identify what the weather and water cycles have in common in a discussion led by the teacher. Student groups make Venn diagrams guided by the teacher comparing and contrasting the weather and water cycles (the key concept being they both start with the uneven heating of the earth’s surface, atmosphere, and earth’s water; and both are traced back to the sun). In the same Venn diagram, students itemize what they learned from their research on how artists have depicted storms (examples: gray/dark clouds, lightning, unexpected colors like red, bold brushstrokes, ships that are off kilter, animals and people running for shelter).

# Students divide into groups of four or five. They experiment with different ways of portraying thunderstorms as a natural force the way the artist did. *How can a thunderstorm be painted to look fierce and realistic on a poster? What painting techniques and details can be employed to that end?* Observe the work of art again, and study the clues; the colors, the movement, the action. Using posterboard, students have the option of (1) creating a painting showing the steps of the weather and water cycles, or (2) making a three-dimensional collage using multimedia (yarn, craft paper, old magazines, fabric scraps) demonstrating the weather and water cycles with an emphasis on thunderstorms. Each poster should depict the sun, clouds, winds, a body of water, the turmoil caused by cold air replacing the warm air, and the thunderstorm. Students may choose their own medium and method to show the storm.

# Assessments

# · Whole-class discussion and research and data collection may be used to assess students’ understanding of weather and artists’ use of the subject in art. · Group discussions and the Venn diagram will demonstrate students’ ability to use the language of visual arts to communicate as well as to analyze artistic expression. · The posters will demonstrate the students’ mastery of the essential phases of the weather and water cycles and their interconnectedness.

# Resources

Vocabulary:

Abiotic factors: all nonliving elements in an ecosystem  
Biotic factors: all living factors in an ecosystem  
Ecosystem: the relationship between the living and nonliving factors in an area functioning as a unit  
Water cycle, evaporation, condensation, precipitation

Materials:

Hot plate, steel pan with lid, poster paper and poster boards, yarn, colored pencils, acrylic paint, watercolors, crayons, old magazines, fabric scraps, glue sticks.

Links:

North Carolina Museum of Art Web site  
<http://artnc.org/node/359>  
  
Painting techniques and samples  
<http://www.ehow.com/painting-techniques/>  
  
Water cycle diagrams<http://images.search.yahoo.com/search/images?_adv_prop=image&fr=yfp-t-701-s&va=water+cycle+diagram>  
  
World Book Web site  
<http://worldbook.com/home?wbredirect=1&Itemid=111>