Discover the properties of watercolor by experimenting with four watercolor techniques, then paint a piece based on characteristics of a watercolor from the Barnes; students create and classify art.

**Grade:** 3–8  
**Subject(s):** visual art, science  
**Time:** 60 minutes

**Objectives for students**  
- Make inferences about watercolor based on observations from controlled tests.  
- Identify prominent characteristics of a watercolor.  
- Create a watercolor painting with a given set of characteristics.

**Overview**  
Students synthesize the scientific process and the artistic process with a design challenge. They experiment with an art medium and create an original work that demonstrates what they have learned in their careful observation and analysis of watercolor.

**Materials**  
- watercolor sets with cups of water (1 set per group)  
- paintbrushes (1 per student)  
- watercolor paper (half-page for testing, quarter-page for art)  
- Experiment worksheet  
- Watercolor Techniques Woksheet (for teacher instruction)  
- salt  
- set of index cards or scratch paper  
- image (printed or projected) of a watercolor from the Barnes Foundation. Suggestion:  

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**Maurice Brazil Prendergast**  
(American, 1858–1924)  
*Rocks, Waves and Figures,* c. 1902–1904  
Watercolor with graphite underdrawing on handmade wove paper, 11 7/8 × 15 7/8 in. (28.2 × 39.7 cm)  
BF4079. Photo © 2016 The Barnes Foundation

**Charles Demuth**  
(American, 1883–1935)  
*Two Acrobats in Red Tights,* 1917  
Watercolor and graphite on laid paper, 13 × 8 in (33 × 20.3 cm)  
BF736. Photo © 2016 The Barnes Foundation

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Procedure

- Students think like scientists while experimenting with watercolor. Their goal is to test techniques to create different effects, then make observations about how the use of the material affects the way the paint looks and feels.
- Once they have tested the techniques on the Instructions for Testing Watercolor Techniques sheet, give each student a watercolor from the Barnes Foundation.
- Students write evidence supporting claims about which techniques the artist used.
- Students use the techniques they identified to watercolor a picture inspired by the Barnes watercolor.

Sample discussion questions

- What do you notice about the color when you use more water? Less water?
- What do you notice about the paper when the watercolor has dried?
  (Hold paper parallel to the floor at eye level.)
- Which technique was easiest to control the paint? Which was hardest?
- What would you use this technique (choose one) for in a painting?
- Why would an artist need to experiment and know the steps and effects of each technique?
- If appropriate, connect to curricular science concepts including water solubility (diluted/concentrated paint and water solution); cohesion, adhesion, and capillary action of water on paper; absorption with salt.

CONNECTIONS TO CURRICULAR STANDARDS

Next Generation Science Standards

Science and Engineering Practices

- Practice #3 Planning and carrying out investigations: planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. Evaluate appropriate methods and/or tools for collecting data. Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. Make predictions about what would happen if a variable changed. Test two different models of the same proposed object, tool, or process to determine which better meets criteria for success.

- Practice #6 Constructing Explanations and Designing Solutions: constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Construct an explanation of observed relationships (e.g., the distribution of plants in the backyard).

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Use evidence (e.g. measurements, observations, patterns) to construct or support an explanation or design a solution to a problem. Identify the evidence that supports particular points in an explanation. Apply scientific ideas to solve design problems. Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.

Cross-Cutting Concepts
• Concept #1 Patterns: observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.

Visual Arts Standards
• Visual Arts/Responding (VA:Re8.1): Interpret art by analyzing characteristics of form and structure, contextual information, subject matter, visual elements, and use of media to identify ideas and mood conveyed.
• Visual Arts/Creating (VA:Cr2.1): Experiment and develop skills in multiple art-making techniques and approaches.