# THINKING TOOLS FOR INNOVATORS: PART 6—WORKING WITH ANALOGIES

Recent research has shown that we can build innovative thinkers by reinforcing a set of thinking tools, including such skills as observing, abstracting, pattern recognition, modeling, and transforming (among others). As these skills can all be taught, it makes sense that we can help students become the creative thinkers that we will need in the twenty-first century. This lesson plan is the sixth in a series that is focused on using art to enrich instruction in these critical skills. The research on which this information is based can be found in many sources, perhaps best summarized in the book *Sparks of Genius: The Thirteen Thinking Tools of the World's Most Creative People* by Robert and Michele Root-Bernstein.



Still Life with a Ham and a Roemer, c. 1631–34 Willem Claesz. Heda, Dutch (active Haarlem) Oil on panel 23 1/4 x 32 1/2 inches (59 x 82.5 cm) John G. Johnson Collection, 1917: cat. 644

# Grade Level

For grades 7–9, with adaptations for elementary and high school

### Common Core Academic Standards

- CCSS.ELA-Literacy.RI.8.4
- CCSS.ELA-Literacy.L.7.5

## PA Academic Standards for Art

 Arts and Humanities 9.3.B – Criteria for Critical Response to Art

# **Art Images Required**

Click on the titles below to view high-resolution photographs on the Philadelphia Museum of Art

website. Images that are also available in the ARTstor Digital Library are indicated by an ID number or search phrase. Entering that number or phrase into the ARTstor search bar will direct you to the corresponding image in that database.

- Still Life with a Ham and a Roemer, c. 1631–34, by Willem Claesz. Heda ARTstor search: Claesz, 644
- Dog Barking at the Moon, 1926, by Joan Miró

ARTstor search: 1952-61-82

 Night Sea, 1977, by Edna Andrade ARTstor search: Not available

For more information, please contact Division of Education and Public Programs: School and Teacher Programs by phone at 215-684-7580, by fax at 215-236-4063, or by e-mail at educate@philamuseum.org.

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# Background

One problem facing physicists in the early 1900s involved the structure and properties of the atom. The German physicist Max Planck viewed the atom as if it was a musical instrument and the movement of electrons as if they were vibrating strings. When Planck applied this analogy mathematically, he uncovered secrets of the electron's energy that not only increased understanding of the atom but also yielded very practical applications. Have you ever had an MRI? You can thank Planck's analogy for that.

If we are going to educate the next generation of innovative and creative thinkers, one key skill is to make and work with analogies. If we observe details, imagine what we cannot see, abstract key information, and recognize and form patterns, then we have the skills to create interesting analogies. Analogies allow us to explain complex things by comparing them to something familiar.

## **Lesson Process**

- 1. Have the class think about how two dissimilar things could be related. How, for example, is life like a carousel? That is a common analogy. Discuss: What purpose does it serve to view things this way? An analogy uses what we know to help uncover secrets of what we don't know. For example, we know about a carousel. Even if you have never actually ridden one, you have seen pictures and understand how they move. Life can be mysterious, however. This analogy allows us to apply what we know about one thing (carousel) to something mysterious (life). Discuss what this analogy could teach us about life. Scientists use analogies all the time to help understand the mysteries of our world. In fact, although our senses are limited, our learning is not. The use of analogy is central to learning.
- 2. Take a few minutes to observe deeply the painting Still Life with a Ham and a Roemer. How would you describe the meal that has been interrupted? Now look at the painting as if it was an analogy for the lifestyle of the people who may have been feasting on this food just moments ago. What could this analogy reveal? We see details in the painting. Now consider how these details are also true of people. Can a person's lifestyle be "turned on its side?" How so? Can you describe people as "unfinished," or their lifestyle as "left in a hurry?" Discuss these insights.
- 3. Now take a few minutes to observe the painting *Dog Barking at the Moon*. Here is another painting that can become a valuable analogy. Could this painting be interpreted as an analogy for a future goal? If so, what does it reveal about our goals? Could this be an analogy for a relationship? If so, what does it reveal? NOTE: To be effective, an analogy doesn't need to be "correct." This painting doesn't need to represent a real relationship, and can still reveal valuable insights. The moon is not really like an apple, yet that analogy helped Newton discover how orbits work.
- 4. If the discussions of these analogies have gone smoothly, it is time to try and reverse the process. Instead of finding an analogy in a work of art, begin with a topic. For example, if you thought a good analogy for life was a carousel, what might be another analogy for life? Why do you think your choice is a good one? What could provide a good analogy for a relationship? A family? Winning (or losing) something important? Having too much homework?

#### Assessment

1. Examine the painting *Night Sea*. After observing closely, write briefly to describe the patterns, colors, lines, and shapes. Select some topic for which this painting could be an analogy. Write about your choice, and include the insights which are revealed through your analogy.

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- Break the class into small groups. Each group is to visit the Philadelphia Museum of Art website and search the collections to select a work of art that is a good opportunity for analogy. Have groups present to the class their selection, the topic for their analogy, and insights revealed through that analogy.
- 3. Read Robert Frost's poem "The Road Not Taken." Consider his lines "Two roads diverged in a wood, and I— / I took the one less traveled by." Write about the effectiveness of this analogy. (As an alternate, read the selection from Henry David Thoreau's "Walden: The Bean-Field.")

## Enrichment

- Go on an "Analogy Hunt." Over the period of a few days, look for analogies in things you see, things you hear, or through ideas that come to you. List these analogies and pull them together into a fullclass list.
- 2. Research the story of how Helen Keller, who could neither see nor hear, could nevertheless get to "know" her world through analogy.
- 3. Play the "Analogy Game." Break the class into two teams. A player from one team gives an object to a player from the other team, who must use that object to select a topic for an analogy.