RAMPED – Summer 2016

Value Study

Value is defined as the relative lightness or darkness of a color. It is an important tool for the designer/artist, in the way that it defines form and creates spatial illusions. Contrast of value separates objects in space, while gradation of value suggests mass and contour of a contiguous surface.

Barbara Ray Midwest Schools Grades 6-8

Pretest Questions	1. How can working in a virtual environment deepen your understanding about the concept of value? 2. What is the principle behind the fact that the reflection of light (and the shadows light creates) can make a shape resemble a form? 3. If a light source reflects upon an object from the upper right corner, where will the shadow be? 4. Why do you think artists need to know the principles of light from a scientific and artist standpoint?
Objectives	By the end of this segment, students will be able to articulate the scientific principles of light as it relates to reflection on an object and how light creates value. By the end of this segment, students will be able to draw a shape of choice, apply light and shadow in appropriate observed places—turning the shape into a form.
Catch	Value deals directly with light. We see things because light reflects off of objects. As our vision detects light, light enters our eyes, hits the retina and an electrical signal is passed to your brain that interprets the signals as an image. In order to draw or paint in a way that creates an illusion of what we see, we must fully understand light and how it reacts on surfaces. Value is the key to the illusion of light.
Activity	1. Students receive *Understanding Value Worksheet* to add to resources in sketchbook. Turn and Talk- discuss the worksheet with a partner- recalling previous knowledge about value. 2. TurtleBot Simulation module: In this lab, students will work with simulations in the TurtleBot environment. Students will create a virtual environment in TurtleBot that includes a sphere, cylinder and cube. Students will add a sphere, cylinder and cube to the virtual environment and experiment with the spotlight from different locations in the room to determine what happens as the light reflects on the objects. 3. Students will discuss their findings with a partner or group and journal their findings. 4. Students will then choose an object and, using a spot lamp, set up a still life with the light source reflecting upon the object
Review	Walk about- Look at each student's virtual environment. Ask user to talk about things they learned through creation of virtual environment with specific questions relating to light.
Assessments	Group/partner discussion (observation and participation rubric) Journal Entries (rubric) Art Project (rubric)

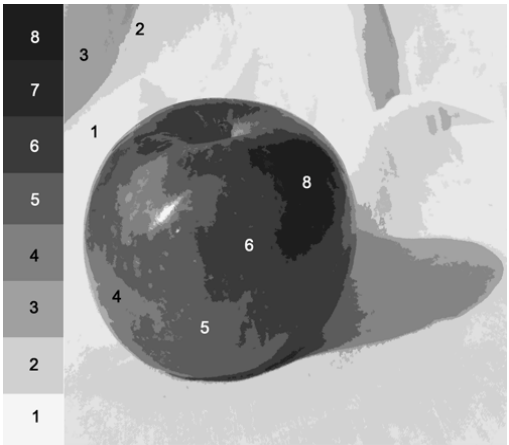
Posttest Questions (same as pretest questions)	1. How can working in a virtual environment deepen your understanding about the concept of value? 2. What is the principle behind the fact that the reflection of light (and the shadows light creates) can make a shape resemble a form? 3. If a light source reflects upon an object from the upper right corner, where will the shadow be? 4. Why do you think artists need to know the principles of light from a scientific and artist standpoint?
Standards	Standard 4: Artistic Connections: Students relate the arts to other disciplines, careers and everyday life FPA 8.4.A.1: Students describe ways in which the principles and subject matter of other disciplines taught in the school are interrelated with the visual arts
Crosscutting Concepts from NGSS	Cause and effect: Mechanism and explanation. Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts. (Retrieved on July 12, 2016. http://www.nextgenscience.org/sites/default/files/Appendix%20G%20-%20Crosscutting%20Concepts%20FINAL%20edited%204.10.13.pdf) The principles of light correspond to the Elements and Principles of Art. Light, for example, is the key to understanding value in art. When light reflects on an object, it creates shades of value, which determines the areas of light and shadow that can be replicated in drawing and painting, turning shape into form. Light conforms to certain rules. These rules are, for the most part, simple, but they create situations that can be counterintuitive or perplexing. *Light acts like particles that stream from the source. This explains how shadows work (they appear on the opposite side of the light source) *Light also acts like waves. This explains how rainbows work. Light is both particles and waves. This "wave-particle duality" is one of the most confounding principles of physics. By creating 3 dimensional objects on a 2 dimensional page, students are better able to grasp the concepts of light.

Understanding Value

Value deals directly with light. We see things because light reflects off of objects. As our vision detects light, our mind processes the light and rationalizes what we are seeing. In order to draw or paint in a way that creates an illusion of what we normally see, we must fully understand light and how it reacts on surfaces. Value is the key to the illusion of light.

Take this apple for example…

If we were to take out all color in this apple, we would still see the apple and recognize it as an apple. In other words, we are just showing the values of the apple.



If we take this one step further and isolate eight of the values, we can see where we would need to draw or paint the values.