**Color**

In Science and Art

**1st teaching period**

# 1st Activity: What do we know about color?

# Duration: 10’

# Class organization: The whole class participates.

Type of activity: brainstorming, warming up, connecting with previous knowledge.

Teacher has written with big colorful letters COLOR on a board and asks two questions:

1. What is color?
2. What do we know about color?

The students provide their answers on sticky notes and post them around the word COLOR.

*(Αlternative activities:*

1. *The teacher has prepared a big paper rainbow and has placed it on the wall, or on a board, so that students can stick their notes with their answers on it).*
2. *A Distant Learning alternative could be a Padlet activity: students may post on the* [*Padlet*](https://padlet.com/palla_eugenia/7gq3dvkk2i9ggy6j) *their short answers on the questions the teacher asks (“Initial Questions” on* [*Padlet*](https://padlet.com/palla_eugenia/7gq3dvkk2i9ggy6j)*).*
3. *Another distant learning alternative could be a World cloud activity: On a word cloud generator application, such as Wordart.com students provide words that they associate with color.*

*Computers or tablets and internet connection are needed for activities 2 and 3.*

# 2nd Activity: Color in Science

# Duration: 15’

# Class organization: whole class

Type of activity: presentation-discussion: Color in science and art. The art teacher presents information on the nature of color, Isaac Newton’s experiment, the color spectrum, etc. For more information you may see the PowerPoint presentation *Color in science and art.*

Actions/Tasks:

Students learn about the nature of color and how we experience color in every day life.

# 3d Activity: Color in Art-Complementary colors

# Duration: 20’

# Class organization: The whole class participates.

# Type of activity: Complementary colors and afterimage: PowerPoint presentation and experiment.

The teacher explains the two different color theories, the one applied in light and screens (Red, Green, and Blue- RGB) and the color theory in painting (Red, Yellow and Blue-RYB). She/he presents Johannes Itten’s color wheel slide from the ppt, where basic, secondary and complementary colors are organized. In addition she/he introduces the theory of complementary colors in painting: Each of the three basic colors in painting (Red, Yellow and Blue) has a complementary color, which is one of the secondary ones, specifically, the one created from the other two basic colors. Thus, there are three complementary couples of colors:

1. Red - green
2. Blue - orange and
3. Yellow - purple.

The teacher explains complementary colors property to create the most intense color contrast and brilliance when they are used side-by-side on a painting and that when they are mixed together they become neutral and create brown hues. Painters use these color properties to create luminous color combinations and vibrant works of art, or calm and serene ones.

Experiments show that human eyes and brain tend to complete the color spectrum when we look at one of the colors, which is the reason why there is a vibrant antithesis between complementary colors. This characteristic also explains why these colors are called complementary! Students can observe the complementary color afterimage phenomenon in class, by the following experiment:

The teacher presents the slides: *Complementary colors & afterimage experiment* with the afterimage explanation and, afterwards, the experiments with the colored circles, from the ppt “Color, in Science and Art”.

She/he asks the students to stare at the red colored circle for 10’’ (they may silently and slowly count to 10) and then turn their sight to the blank space next to the red colored circle for another 5’’. If they follow the directions and keep their eyes fixed on the red and afterwards the blank surface, they will experience an afterimage of the circle, colored with its complementary color! It looks like a “ghost” of the original image and it has the same shape and a vivid opposite color! The teacher repeats the example with all three colored circles provided: red, yellow, blue and, every time, she/he asks the students about the color of the afterimage they see. The experiment is repeated with the negative image of Mona Lisa. *The experiment can be continued, or altered, by observing colored objects in the classroom, such as colored monochromatic notebooks, school bags or students’ clothes, such as t-shirts, jackets etc (this variation will actively engage students who would volunteer to act as the colored examples, and this can be a fun activity!)*

Actions/Tasks:

1. Students learn about complementary colors and their use in art and participate in an experiment on visual perception-afterimage and complementary colors.

A glossary is available throughout the lessons.

*Expansion: during another teaching period students may paint a theme of their choice, using only one complementary color couple, adding different tones and hues (*[*example on Padlet*](https://el.padlet.com/palla_eugenia/7gq3dvkk2i9ggy6j/wish/2067182033)*), thus understanding the vibrant color contrast in their own work.*

**2nd teaching period**

# 1st Activity: Colored Shadows

# Duration: 25’

# Class organization: whole class, individual/pair work

# Type of activity: Colored Shadows: video projection and worksheet completion

# Actions/Tasks: students watch 4 small videos about Colored Shadows and answer the questions on [Worksheet I](https://docs.google.com/document/d/1Ynhgl_O1MYbW_5pohQpmckXwnAoqCUmW/edit) (please watch [the first 4 videos of the demonstration](https://www.exploratorium.edu/snacks/colored-shadows) on color shadows, video duration 5, 3’ in total- 0:59’, 1:43’, 0:46’, 1:36’). Students first complete the worksheet individually and then discuss their answers in pairs. A discussion follows in class.

*Expansion: During another teaching period the teacher and the students may try the experiment with the colored shadows in class, after watching* [*the 5th video of the Exploratorium demonstration on color shadows*](https://www.exploratorium.edu/snacks/colored-shadows) *and gathering the material needed.*

# 2nd Activity: Improve your artwork

# Duration: 20’

# Class organization: pair work & whole class discussion

# Type of activity: reading, worksheet completion & whole class discussion

# Actions/Tasks: Students, in pairs, read the text ‘Improve your artwork’ (alternatively they visit the [online text](https://design.tutsplus.com/articles/improve-your-artwork-by-learning-to-see-light-and-shadow--cms-20282) and complete [Worksheet II](https://www.canva.com/design/DAE5ZRRqPvM/EsJ5nl5cPmE6UKKMcVZmPg/view?utm_content=DAE5ZRRqPvM&amp;utm_campaign=designshare&amp;utm_medium=link&amp;utm_source=sharebutton). A whole class discussion follows on the students’ answers.

**3d teaching period**

# 1st Activity: Color, tone and aerial perspective

# Duration: 15’

# Class organization: whole class

# Type of activity: Presentation-discussion in art class: “Wanderer Over a Sea of Fog”, by Caspar David Friedrich. PowerPoint *Color in Science and Art, slide19.*

Actions/Tasks: Students observe Friedrich’s painting, and discuss the use of color for the illusion of depth. The teacher may ask one or two triggering questions (How far away are the last mountains we see in the painting? How does the painter achieve the illusion of distance? ). After a short discussion, she/he explains the term *Aerial Perspective*, the natural phenomenon of color and contrast fading, as objects and figures move away from the observer. Painters try to imitate this phenomenon in their work using various color techniques (See also the [*Aerial Perspective Hints*](https://padlet.com/palla_eugenia/7gq3dvkk2i9ggy6j/wish/2059435369), on the lesson’s Padlet*.*

# 2nd Activity: How to paint a landscape with aerial perspective

# Duration: 30’

# Class organization: individual work

The students may sit in pairs and use the same pallet and water container and only one color they choose. They will need one medium size, soft round brush each and a piece of paper or cloth, to wipe excess color/water.

# Type of activity: Hands on /Painting in the art lab

Actions/Tasks: Students create an artwork on watercolor paper (or other thick, white paper), with gouache/tempera or acrylic paint, with an aerial perspective effect. They paint a simple landscape with overlapping layers (i.e. of mountains, or buildings), with tones of one color only (preferably cool colors), but using different hues. In the areas close to the observer they should use dark tones (preferably in combination with bright tones/ high contrast). On the contrary, at the background, they should use medium and fading light tones as they paint the most remote elements. Ideally this activity could take place at an outdoor spot (i.e. overlooking distant hills and mountains) where students could actually observe aerial perspective in real life. [Example](https://padlet-uploads.storage.googleapis.com/338404975/d402eec5fb95d59d52535f40f467f6b3/Marianna_Papapanagiotou__1_.jpg)

# 3d Activity: Homework

# Estimated time: 30’

# Class organization: The whole class participates remotely, everyone on her/his own

# Type of activity: Students complete their work at home by adding objects, human figures, animals etc, trying to enhance the perspective effect, by applying the [aerial perspective hints](https://padlet.com/palla_eugenia/7gq3dvkk2i9ggy6j/wish/2059435369). [Example](https://padlet.com/palla_eugenia/7gq3dvkk2i9ggy6j/wish/2063554558). The students are instructed to draw themes from their own lives, hobbies and experience, to complete their work.

# Actions/Tasks: students paint details on their work to enhance the illusion of aerial perspective and depth and post a photo of their work on the [padlet](https://padlet.com/palla_eugenia/7gq3dvkk2i9ggy6j) (under the tab “Landscapes with aerial perspective”). They are encouraged to post “likes” (with hearts) on their peers’ works.

**4th teaching period:**

**Color and the art of Impressionism and post-impressionism/ pointillism**

1st Activity: Impressionism, Pointillism and color

Duration: 15’.

# Class organization: The whole class participates.

# Type of activity: presentation-discussion: additive mixture in impressionism.

# Presentation of the painting *Impression Sunrise*, by Claude Monet and *La Grande Jatte*, by George Seurat’s from the PowerPoint presentation “Color in Science and Art (basic concepts of light representation in impressionism & pointillism dot technique. Unmixed color creates the color mixture- new color- in our brain.

* Presentation of the slide *Color in digital and printed images,* aboutpixels from the ppt “Color in Science and Art”.

Actions/Tasks: Students learn how the scientific knowledge on the phenomenon of color has been utilized by artists to reveal a new vibrant form of painting color and create avant guard art of Impressionism and Post-Impressionism/Pointillism, during the turn of the 19th century in Europe. They learn how our brain mixes color when we observe small color surfaces or spots from a distance and the application of this fact in digital and printed images.

# 2nd Activity:

# Duration: 30’

# Class organization: The whole class participates.

# Type of activity: Hands on: Painting of a tree with gouache/tempera or oil pastels using the impressionists’ technique (suggested painting material for the background: watercolor or thinned gouache).

Actions/Tasks:

1. Students paint a tree with the impressionistic color technique, or alternatively pointillism, using oil pastels, or gouache/tempera on paper. They are asked to draw a simple and light tree figure outline with a pencil and then use basic colors (oil pastels or other material), red, yellow and blue, along with secondary colors (green, orange, purple) to paint smaller and bigger brushstrokes or pastel marks inside the outline of the tree, with quick brushstrokes and no detail. They are asked to assume that the lighting source is on the left or right side of the tree and try to differentiate their color brushstrokes accordingly, in order to create the proper light effect. Ideally, if possible, this activity could take place outdoors were students could actually observe light on real trees and the differentiation of color and tones.
2. Students paint a background for their tree (sky, other plants and trees), with the impressionistic painting technique but with different colors.

# 3d Activity: Homework

# Estimated time: 20’

# Class organization: The whole class participates remotely.

# Type of activity: organizing the work, presenting, commenting, evaluating

Actions/Tasks: Students post a photo of their work on the [padlet](https://padlet.com/palla_eugenia/7gq3dvkk2i9ggy6j) under the tab *“The Impressionist’s trees”* and post “likes” (using hearts) on their peers’ works.

Assessment/ Practice

<https://quizlet.com/674199365/flashcards>

<https://wordwall.net/el/resource/29401414>

<https://h5p.org/node/1252087?feed_me=nps>