Color & Optical Illusions

Designed by Aimee Carmella

Essential Question: Why do we feel a certain way when we examine optical illusions?

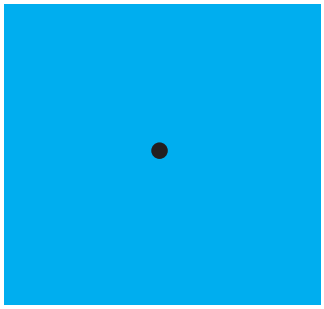
Grade Levels: 4th and 5th grades

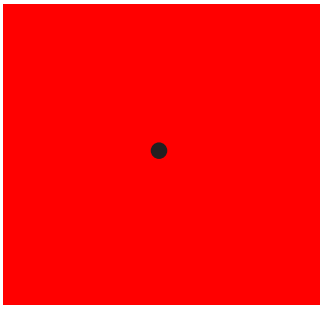
Time Span: 1 - 45 minute lesson plus extra class time as needed to finish work.

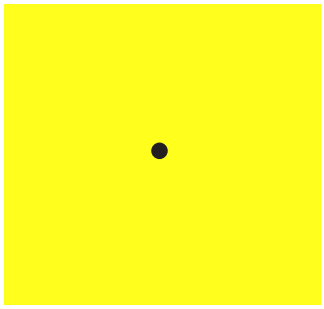
Maine Student Learning Results	A1 - Artist's Purpose (3-5) A2 - Elem. Art & Princ. of Des. (3-5) B1 - Media Skills (3-5)
Learning Objectives	Learner will understand and identify primary and secondary colors on color wheel and from this knowledge as well as from discussion/exercises in class will also be able to identify complementary colors.
Visual Provocations	Please see attached sheet for color wheel and after image examples.
Evidence of Performance	Ability to identify what a primary and secondary color is. Identify what a complementary color is both on the color wheel and on the examples they will create in class.
Assessment Tools	Formative assessment during lesson by discussion about primary, secondary and complementary colors. Color wheel piece that they work on individually to identify the colors in the color wheel as well each color's respective complement.

Visual Provocations

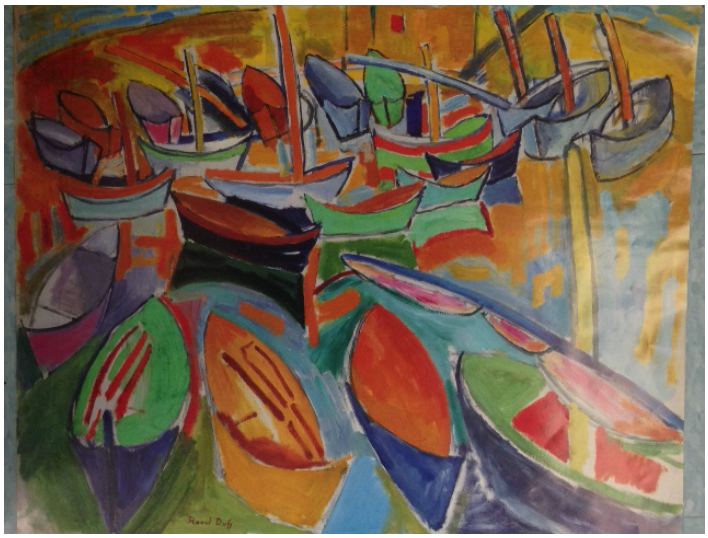
The Color Wheel and Complementary Colors







Dahlov Ipcar
Bright Barnyard
1965 (Poster at School)



Raoul Dufy
Barques à Martigues
1907 (Poster at School)

Color & Optical Illusions - Lesson 1

The Color Wheel and Complementary Colors

Provoking Questions
What are Secondary Colors?
How do we make Secondary Colors?
What are Complementary Colors?

Lesson Objectives
Learner will identify primary and secondary colors on color wheel and understand how to identify complementary colors.
Learner will create a work of art using knowledge of complementary colors and the color wheel.

Materials
+ Color Wheel
+ 8x10 sheet of red, yellow, and blue construction paper with a black dot in the center of it for after-image experiment (one sheet per table of students)
+ Poster-sized sheet of white paper for after image experiment (1 per table)
+ 6"x6" sheet of white drawing paper (1 per student)
+ Colored pencils in red, yellow, blue, violet, orange, green. (two sets of colors per table)
+ Construction paper pre-cut in the following amounts distributed to each pair of students:

1 - 2"x2" square red	1 - 1"x1" square violet
1 - 1"x1" square green	1 - 2"x2" square blue
1 - 2"x2" square yellow	1 - 1"x1" square orange

+ Precut "slices" of color wheel's secondary colors with tape stuck on the back.

Vocabulary:
+Primary Colors
+ Secondary Colors
+ Complementary Colors
+ After-Image
+ Color Wheel
+ Analogous
+ Organic shape

Visual Provocations:
+ Color wheel
+ After image examples.
+ Dufy and Ipcar posters

Instruction:
1. Begin class with color wheel (only primary colors visible) on a display board. Ask students if they know what the term for these three colors in this arrangement are. (Primary Colors - Why are they primary? Because we cannot mix these colors to create them.). Ask students what happens when you pretend two of these colors can be mixed, like paint, together. What happens when you mix together red and yellow? (Orange.- Stick an orange piece of paper inbetween red and yellow.)What about yellow and blue? (Green. - Insert green between yellow and blue.) What about red and blue? (Violet. Insert violet between red and blue.) What are these three colors called? (Secondary Colors.) What about what the whole arrangement - what is that called? (Color Wheel.)

2. A sheet of blue, yellow or red construction paper that has a black sharpie marker dot in the center of it (with nothing around it to detract from experiment) will be placed on each table along with a white sheet of larger-sized paper. Ask students to stare at the center dot for thirty seconds (teacher can count aloud). After thirty seconds are up, have students stare at the white sheet of paper hanging besides it. Ask students what they see at each table. (They should see the color's complement. Students may switch tables at this point to view another color afterimage example. Ask students what they think this is called.

(After - image). Briefly describe how after-images are what we see after staring at one image for a long period of time and then look at a blank surface right after. Scientists are still not exactly sure why this occurs.

3. Have students come back to the color wheel example. The red colored piece of paper they were looking at is still on the wall. Ask for a volunteer to point to the color opposite red on the color wheel - what color is directly opposite red? (Green.) Say to class - that is the color's complement. Red and Green are complements of each other. Ask for volunteers to point out the remaining complementary colors. Keep the color wheel in full view for students to reference during mini-project.

4. Have students view the Dufy and Ipcar posters on the board. What is different about them? (One uses analogous, the other uses complementary.) Ask students to point out complementary colors in poster.

5. Have students sit at seats. They will create their own complementary color arrangements using squares that are precut. Describe how you should stack the squares once you've decided what complementary colors work together. Explain that when they are done, the group should raise their hand and I will come check that they got the order correct. Explain that after they do that, they will be working on a complementary color / color wheel project on their own. I wanted to show you what to do now before I set you free to work.

6. Pass out white paper to tables, one per person. Explain how to fold the paper. (Do it together if time allows.) Point to the poster agenda with following steps listed:

1. Name and Code on back
2. Fold paper into six sections
3. Draw organic shape
4. Color outside of organic shape
5. Color inside it's complement

7. Show finished example of complementary color drawing.

8. Have helper table pass out squares to each partner group.

9. Distribute colored pencil bundles to each table when groups have successfully finished their complementary color arrangements.

Clean Up:
Construction paper squares placed into a pile to be collected by helper table. Colored pencils and artwork to be collected and stored.

Modifications:
Students will have color charts printed for reference in front of them while they are working.

Instructional Resources:
Color Wheel (Attached) via: http://artprojectsforkids.org/free-color-wheel-download/

Color Wheel

Example of finished complementary color / color wheel project.