3-D Workshop

AT A GLANCE:

Kids will learn about perception and how we can trick our eyes into seeing 3-dimensional images with the physics of color. They also will make their own working 3-D glasses with household materials.

STUDENTS WILL BE ABLE TO:

Demonstrate the process of science inquiry by posing questions and investigating phenomena through language, methods and instruments of science.

BACKGROUND INFORMATION:

Our brain and eyes work together to interpret the images we see. In order for 3-D art to work, we must trick our eyes into viewing 2 images separately.

MATERIALS:

- 8" x 3" piece of poster board
- 3" square of red cellophane
- 3" square of blue cellophane
- Red crayon or marker
- Blue crayon or marker
- Coloring book or paper
- Large rubber band (cut open) or elastic strip

PROCEDURE:

1. Measure the distance between your eyes and cut out holes smaller than 3" in diameter in the piece of poster board.
2. After cutting out eye holes, hold up to your eyes again to measure for a nose rest.
3. Carefully glue or tape red cellophane to right side of your glasses and the blue side to your left.
4. Using a hole punch, put a hole on each side of the glasses.
5. Tie your rubber band or elastic strip to each hole.
6. Experiment with different colored pencils and crayons. Can you make cool 3-D effects?

Try this:

Take a look at a 3-D comic book through 3-D glasses. What is happening? The bluish lenses filter covers the right eye and the red filter covers the left eye. The drawings and photographs are done in adjacent red and

blue outlines. Where the red (or orangish) and blue overlap, there is brown. Through the 3-D glasses the red and blue drawings merge into one black drawing. Why?

- Close your left eye. What happens? (The black drawing shifts to the right)
- Close your right eye. What happens? (The black drawing shifts to the left.
- Look through the red lens at the red and blue drawings. What happens? (The red drawing disappears and the
  Blue drawing turns black)
- Look through the blue lens at the red and blue drawings. What happens? (The blue drawing mostly disappears and the red drawing turns black)

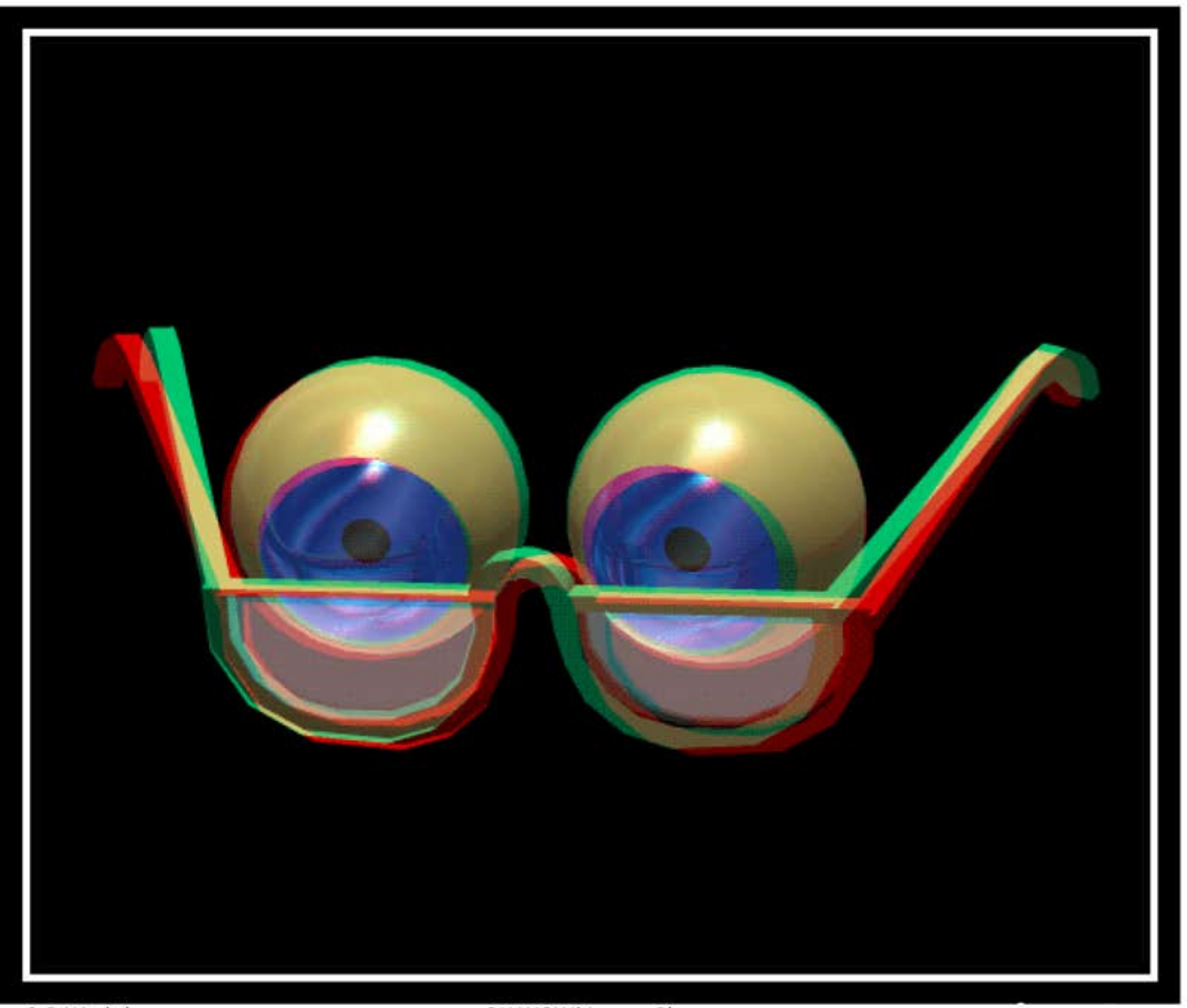
DETAILED EXPLANATION:

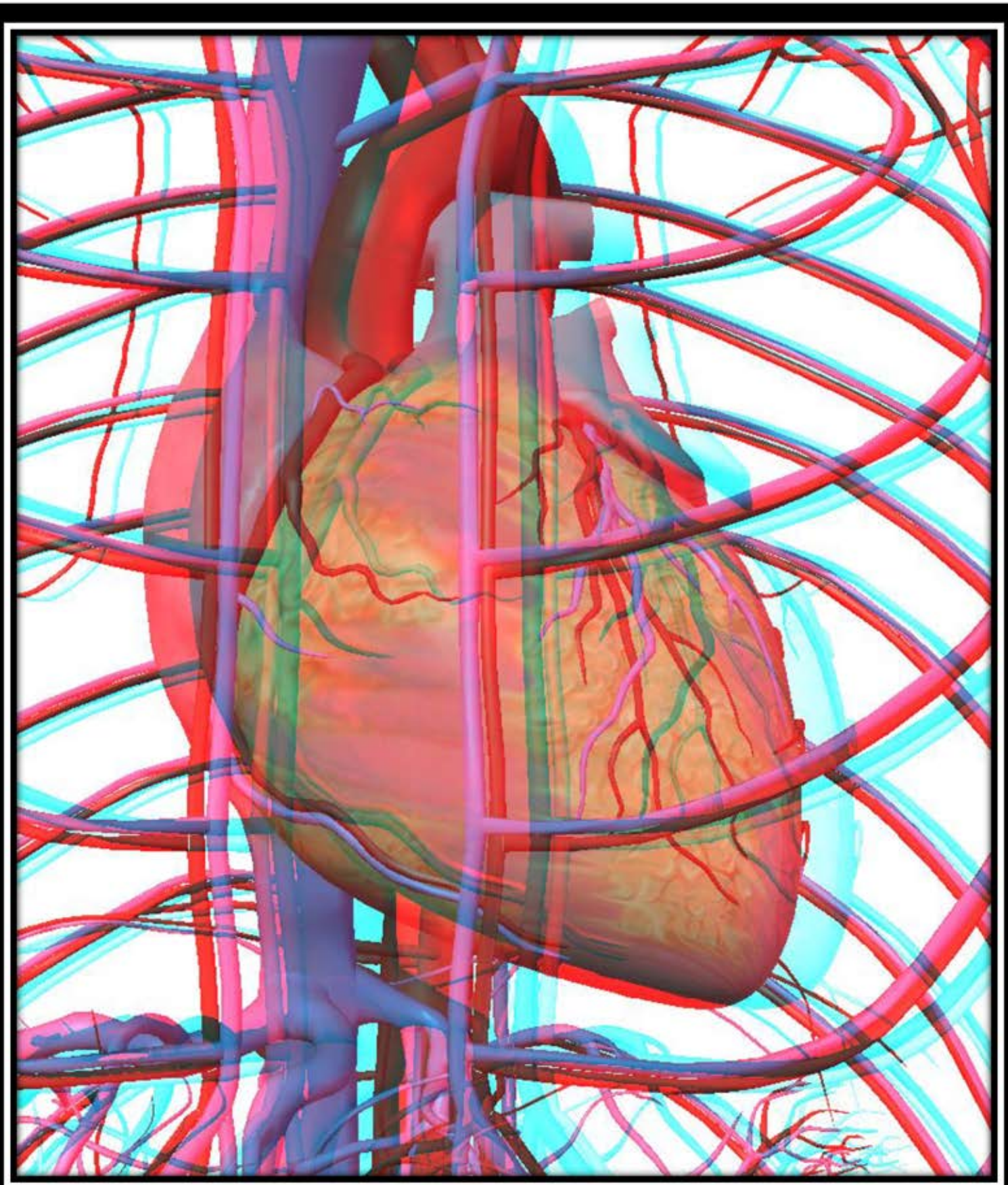
The blue drawing looks black when viewed through the red filter because no blue or green gets through the red filter. Only red and orange pass through the red filter. Orange does pass through the red filter along with the red. The red and orange of the white paper also pass through the red filter. The orange drawing disappears because the red and orange of the white paper and of the orange drawing pass through the filter. The two look the same.

When the right eye looks at the 3-D drawing through the blue filter the orange portion of the picture turns black and the blue part disappears. When the left eye looks at the 3-D drawing through the red filter, the blue part of the drawing looks black and the orange part disappears. The right eye sees one black image. The left eye sees a different black image. The two black images are in different locations on the retina of each eye. The brain brings the two images together to make a 3-D image. The secret to 3-D drawing is that each eye sees a different black image. The brain merges the two images.

Should the blue drawing be to the left or the right of the orange (red) drawing? This will be the key to their success at 3-D drawing for perspective. Look at objects that look close up. Notice the distance between the blue on the right and the orange on the left. This gives considerable binocular disparity. The left eye looks far to the right and the right eye looks far to the left. The object looks close. Increase the distance between the two colors in the drawing and the object will look closer still. Observe the objects that look a middle distance away. The blue is to the right but very close to the orange. This is less binocular disparity. The object looks farther away. To further decrease binocular disparity, the blue moves to the left and the orange to the right. The right eye looks more directly at orange and the left eye looks more directly at blue. As the distance between the blue drawing (now on the left) and the orange drawing (on the right) increases, the binocular disparity decreases and the object looks farther and farther away.

Have students analyze these images with their glasses and observe in which areas of the images appear closer and in which areas they appear father away. Notice the positioning of the green and blue lines in relation to the red and orange lines. This will help them to create 3-D effects in their own artwork.





http://www.forodefotos.com/attachments/fotografia-digital/16269d1294868025-imagenes-en-3d-imagenes-en-3d-tigre.jpg