



# STEM By The Book

## Hello, Red Fox Eric Carle



### Experiences and Outcomes

I can identify my senses and use them to explore the world around me. [SCN 0-12a](#)

I have explored my senses and can discuss their reliability and limitations in responding to the environment. [SCN 1-12b](#)

I have explored the structure and function of sensory organs to develop my understanding of body actions in response to outside conditions. [SCN 2-12b](#)

I can use a range of graphic techniques, manually and digitally, to communicate ideas, concepts or products, experimenting with the use of shape, colour and texture to enhance my work. [TCH 2-11a](#)

I can create and present work using the visual elements of line, shape, form, colour, tone, pattern and texture. [EXA 1-03a](#)

I can create and present work that shows developing skill in using the visual elements and concepts. [EXA 2-03a](#)

## Activity – After Image Illusion

In the book Hello Red Fox, the fox does not appear to be red at all, that is until you look long enough! Once you switch your gaze to the white page opposite, the red fox appears. This book is a great introduction to investigating sight and how the eye works, and it is worth discussing this before making your own after image illusion.

### What is happening?

When you stare at the green fox for long enough then move your eye to the white page you experience what is called an after image.

The eye is made up of cells and it is the cone cells at the back of the eye that are sensitive to coloured light (Figure 1). We have cones which detect red, blue and green light.

When you stare at the green fox for a long time the green cones become fatigued and for a short time afterwards they cannot send messages to the brain. This means when you move your eye to the white page, only the blue and red cones are working fully, leaving you with an after image in a red or magenta colour.

The colour of after image you see depends on complementary colours as shown on the colour wheel (Figure 2). You will see red is opposite green.

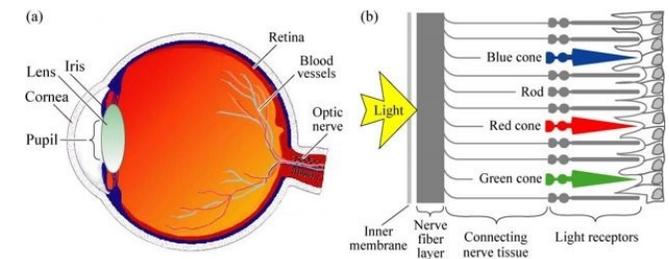


Figure 1

Adapted from Encyclopedia Britannica, 1994

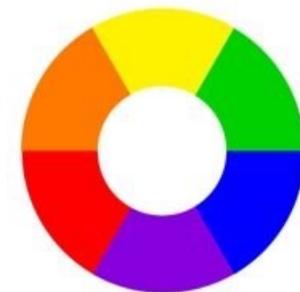


Figure 2

## Resources

- White paper
- Coloured paper or card
- Coloured pens
- Black pen
- Scissors
- Glue stick

## Activity – After Image Illusion

Now you have investigated what is happening with the after image you can make your own after image illusion books using this concept.

Take your white paper and fold it into a booklet form. On the left-hand page either use pens to draw a large coloured image or cut out coloured paper or card into the shape of your choice and stick it onto the left-hand page. Make sure to use strong colours and not light pastel shades.

On the left-hand image draw a black dot in the centre of the image to give the person looking at it a point to focus on. On the blank right-hand page draw a black dot in the same place (Figure 3).

Add to your book using different colours and shapes, try using an image with two colours and see what happens. If you think about the

complementary colour wheel you should be able to predict what colour after image you might see.

You could use digital technology and make this into a Power Point presentation using clip art (Figure 4) to form your images and displaying first the coloured slide and then a blank slide to get the same effect.

Now you have made your own book test it out on friends and family, remember to ask them to focus on the black dot on the left-hand image for around 30 seconds before switching their gaze to the black dot on the white page to see what happens. The effect works best in well-lit conditions.

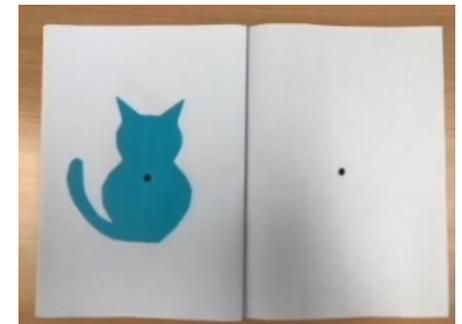


Figure 3

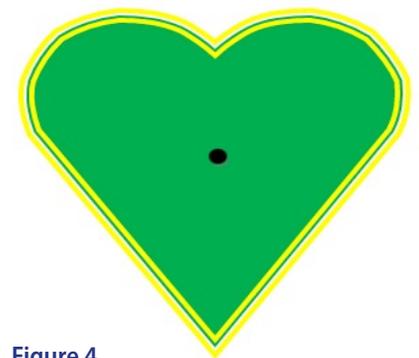


Figure 4

## Hints and Tips

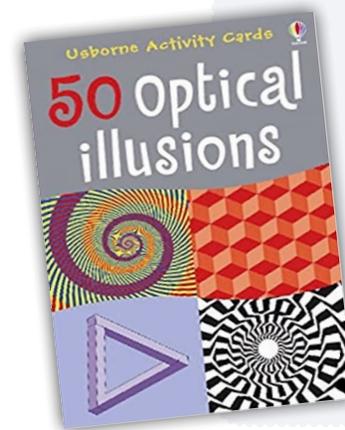
If you find the after image illusion does not work at first, try staring at the first image for a little longer or moving to a better lit area to try again.

## What Next?

You can watch our video showing you how we made our own after image illusions [here](#).



Read more about optical illusions and how the eye can be tricked in our [Primary Bulletin](#).



[Usborne 50 Optical Illusion Activity Cards](#) are a great resource for investigating and understanding optical illusions.

