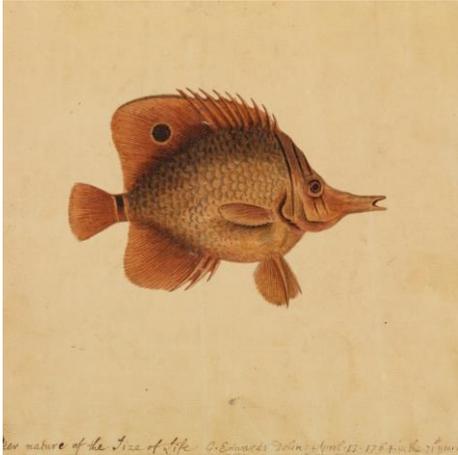


Science in the Making: illustrating science

This resource was developed by teachers within the Royal Society Schools Network



Butterflyfish, 13 April 1763. From The Royal Society, MS/131/89

Curriculum key words

Diagram
Illustration
Observe

Curriculum links

Working Scientifically

- Observing closely, using simple equipment.

Animals including Humans

- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.
- Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).

Equipment needed

- hand lenses and/or low powered microscopes;
- images from Science in the Making;
- (ideally) tablets or computers so that the students can zoom in on the images;
- (ideally) insects in plastic blocks.

KS1

Introduction

This lesson looks at the difference between different types of scientific image from photographs to beautifully drawn, detailed images to diagrams. The students will identify similarities and differences and why one might be used in preference to others. They will then go on to use magnifying glasses to closely observe and draw in detail one of the images from Science in the Making.

The activities could form one long lesson or could take place over 2 – 3 sessions.

Learning objectives:

To understand that science requires careful observations and detailed recording of information.

Success criteria (SC):

- SC1: I can observe closely, using a magnifying glass or microscope to see details.
- SC2: I can draw careful pictures of what I see.
- SC3: I can compare pictures and say what things are the same and what things are different.

Science in the Making: illustrating science

Starter activity: careful observation

(Approximately 10 – 15 mins) [SC1 and SC2]

Take a selection of images from the Royal Society's [Science in the Making](https://makingscience.royalsociety.org) website (<https://makingscience.royalsociety.org>) from the two themes: [Scientific Illustrations](#) and [The British National Antarctic Expedition](#).

Explain to the students that these are all real scientific images (photographs and illustrations) created or taken by scientists at the time of observing or exploring, now stored by the Royal Society.

Allow the students time to explore each image (remembering you can zoom right in), talk about what the image is about and what they can see. Allow them time to ask any questions which can be added to post it notes and displayed on a board for further investigation.

Links to a variety of suitable images for the activities described:

1. [Vibrio tritici nematode worms](https://makingscience.royalsociety.org/s/rs/items/PT_73_10_2) (https://makingscience.royalsociety.org/s/rs/items/PT_73_10_2)
2. [Fossil rhinoceros skull](https://makingscience.royalsociety.org/s/rs/items/PT_73_9_3) (https://makingscience.royalsociety.org/s/rs/items/PT_73_9_3)
3. [Helix janthina \[marine snail\]](https://makingscience.royalsociety.org/s/rs/items/PT_73_6_15) (https://makingscience.royalsociety.org/s/rs/items/PT_73_6_15)
4. [Oak bush-cricket legs](https://makingscience.royalsociety.org/s/rs/items/PT_73_5_25) (https://makingscience.royalsociety.org/s/rs/items/PT_73_5_25)
5. [Sumatra dugong](https://makingscience.royalsociety.org/s/rs/items/PT_73_8_18) (https://makingscience.royalsociety.org/s/rs/items/PT_73_8_18)
6. [Lepas ansifera, various stages of metamorphosis](https://makingscience.royalsociety.org/s/rs/items/PT_74_1835_106_1_5) (https://makingscience.royalsociety.org/s/rs/items/PT_74_1835_106_1_5)
7. [Wasp and locust](https://makingscience.royalsociety.org/s/rs/items/MS_131_85) (https://makingscience.royalsociety.org/s/rs/items/MS_131_85)
8. [Larva of Cineras vittatus, various stages of metamorphosis](https://makingscience.royalsociety.org/s/rs/items/PT_74_1835_106_6) (https://makingscience.royalsociety.org/s/rs/items/PT_74_1835_106_6)
9. [Butterflyfish](https://makingscience.royalsociety.org/s/rs/items/MS_131_89) (https://makingscience.royalsociety.org/s/rs/items/MS_131_89)
10. [Skua's feeding](https://makingscience.royalsociety.org/s/rs/items/NAE_6_844) (https://makingscience.royalsociety.org/s/rs/items/NAE_6_844)
11. [Young Weddell Seal 4 to 6 weeks old, moulting](https://makingscience.royalsociety.org/s/rs/items/NAE_2_156) (https://makingscience.royalsociety.org/s/rs/items/NAE_2_156)
12. [Penguins and young](https://makingscience.royalsociety.org/s/rs/items/NAE_6_779) (https://makingscience.royalsociety.org/s/rs/items/NAE_6_779)

Activity A: comparing images

(Approximately 10 - 20 minutes) [SC3]

On the interactive whiteboard, or using print outs per table, show two images at a time and compare them considering what is the same and what is different for things like:

- Some are photos, some drawings.
- Some are artistically drawn and coloured, some are diagrams.
- They are all detailed.
- Some are really zoomed in.

- Some are not the whole animal but only part of the animal and of these some are in different orientations.
- Some have annotations.
- Some are in colour some aren't.
- Some look realistic, some don't.

Ask questions such as:

- What do you think the purpose of this image is? (E.g to show the different parts of an animal, to record the animal if you were observing it.)
- Does it matter that this one isn't coloured? (Perhaps colour would prevent you from seeing some of the important parts of the animal.)
- Does it matter that this only shows part of the animal? (The fly leg is only part of the fly but the scientist may have been trying to capture information about how the fly's leg works so it isn't important that the rest of the body isn't present but it is important that the leg is viewed from 3 different angles.)
- Why the details on some of the drawings are important.
- How the students think the scientists were able to draw in such detail.
- What did they use to help them draw in such incredible detail?
- Is it important that all scientists are really good drawers?
- Do scientists still do lots of drawings today or has technology changed that? In what way?

Activity B: carrying out careful observational drawings

(approximately 15 – 30 minutes) [SC2]

Provide the students with some of the images they've looked at and give them some time to do some careful observing and drawing of their own. Alternatively, if you have them available, you could use insects in plastic blocks for students to make new observations.

Microscopes and hand lenses could be used to support them in drawing in detail.

Suggest that perhaps not the whole animal needs to be drawn – to encourage this use a cardboard frame to encourage focusing in on a specific area or cut an image into pieces and the students only draw the part of the drawing that they have.

Summing up [SC3]

Photograph the drawings to make a class library of drawings on the computer that similar to that of the Royal Society's Science in the Making library. OR

Make a classroom display out of the pictures the students have made. Give the students the opportunity to comment on each other's work either verbally or, if they are able to write well enough, by adding comments on a digital learning platform or by adding sticky notes to the display.