Picturing Fossils -1
Visualise and draw fossils from a verbal description

Encourage pupils to look carefully at fossils and to describe them verbally so that another person can visualise them from the description.

Seat pupils in pairs, with each person holding half of the photograph cards showing fossils, printed and cut up from those shown below. They should NOT show each other what cards they have in their hands.

Pupil A then examines one photograph and describes it as fully as possible to Pupil B, who listens carefully and then tries to draw it. Pupil B must listen in silence and not ask any questions. Pupil B then takes a turn with another card, with Pupil A doing the drawing, also in silence. Pupils should then compare their hand-drawn efforts with the photographs.

Note:
If the pupils who are speaking think that they recognise the group to which the fossil belongs, they may say so, and then use their description to check their diagnosis. Recent examination specifications in the UK have reduced the number of fossil groups and technical terms which pupils are expected to recognise, compared to former times. However, pupils will probably find unknown fossils during their fieldwork and should be able to describe them and look them up, without trying to fit them into groups with which they are familiar. For the sake of brevity, some technical terms will be used in the descriptions below.

This first round should be tried without any guidance. Then give each participant the Prompt Card, to encourage them to be more specific in further descriptions, and ask them to work through the remaining photographs, comparing their drawings with the photographs after each round. Note that some fossil groups may be repeated on different photographs.

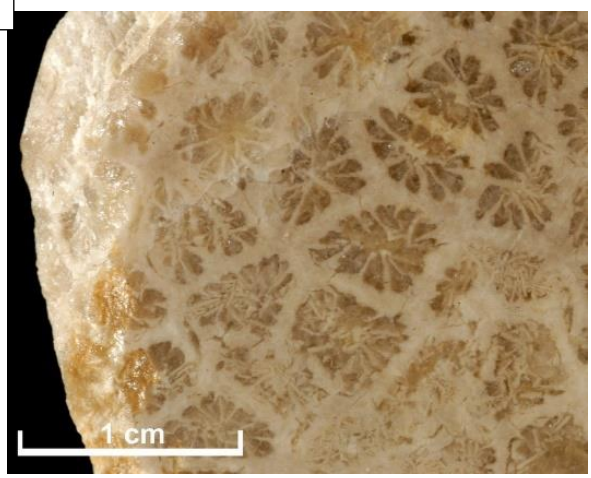
When all have finished, give out the descriptive cards and ask pupils to match the descriptions to the photographs which they have been using. Names assigned to the fossils are shown in inverted commas if a precise identification has not proved possible.
Each black or white bar on the scale in the photographs is 10mm.

A

B

C

D



E

F

G

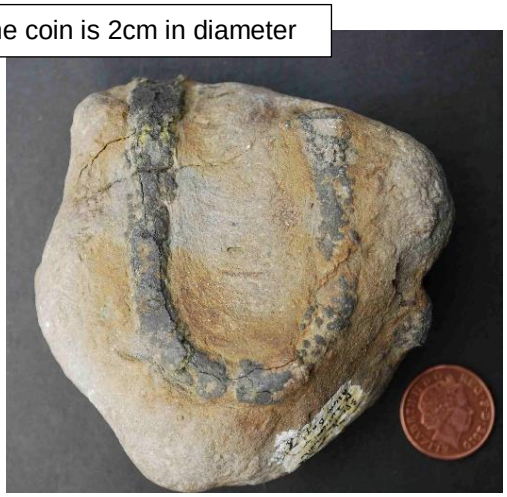
H

I

J scale bar 2cm

K

L The coin is 2cm in diameter



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Prompt Card

Use this card as a check list to aid your verbal description of your photographs to your partner

If you think that you know the name of the group to which the fossil belongs, you may tell your partner, but be sure to check your identification as you describe the specimen.

Is it a body fossil or a trace fossil?

Is it a solitary organism or a colonial one?

What size is the specimen?

What aspect does the photo show? e.g. top view;

Does the specimen show any symmetry? e.g. bilateral, radial

Descriptions of the photographs

1. Coral (*Isastrea*). A colonial scleractinian coral, with tightly packed polygonal corallites, each with strong radial septa (vertical plates)	7. Echinoid (*Micraster*). An irregular heart-shaped echinoid, with a small apical disc at the centre and five ambulacra radiating away from it. The anterior (front) ambulacrum is deeply grooved and leads down to the mouth on the underside (not seen in this view). Pores for the tube feet are visible.
2. Coral (*Halysites*). The cut and polished top view of a colonial tabulate coral. The corallites are joined in “chains”. There are no septa.	8. Trilobite (*Calymene*). A plaster replica. The specimen may be divided into three “lobes” - one axial and two lateral. It comprises a cephalon (head), with two eyes and a deeply furrowed glabella; a thorax with 13 segments; and a pygidium (tail), although this is difficult to discern from the photo.
3. Ammonite (*Dactylioceras*). An incomplete specimen (the body chamber is missing) with an evolute shell of 5 whorls. The ribs are strong and closely spaced and most appear to bifurcate (divide) as they pass over the margin of the shell.	9. Bivalve (*“Pecten”*). A strongly ribbed bivalve shell with a plane of near lateral symmetry at right angles to the shell. This could cause confusion with a brachiopod but the presence of broken “wings” on the right hand side would suggest that it is a bivalve.

4. Trace fossil (U-burrow). The photograph shows the specimen the right way up, in the living position of the organism that made the burrow. Dark faecal pellets fill the burrow in contrast to the pale sandstone host. U-burrows are characteristic of the intertidal zone.	10. Gastropod ("*Neptunea*"). A smooth shell with fine growth lines. (The top of the "spire" is missing). There is a groove (siphonal canal) at the base of the aperture. This specimen is unusual in that it shows sinistral (left-handed) coiling.
5. Graptolite (*Didymograptus*). Several specimens are preserved along a bedding plane. Each shows a pointed sicula, with two stipes below, referred to as pendent stipes. The thecae are simple, resembling the teeth on a saw.	11. Brachiopod ("*Spirifer*"). The bilateral symmetry at right angles to the junction of the valves defines this as a brachiopod and not a bivalve. The straight hinge line forms the widest part of the shell, which is strongly ribbed.
6. Bivalve (*Gryphaea*). A heavy shell consisting of two unequal valves, the larger one of which is strongly curved. There is no apparent symmetry, either between the valves or at right angles to them. Growth lines are visible, but ribs appear to be absent.	12. Crinoids. A cut and polished section through a limestone composed largely of the remains of crinoids. Only the stems are preserved, in random orientations, suggesting that strong underwater currents had acted on the loose crinoid debris.

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The back up

Title: Picturing fossils - 1

Subtitle: Visualise and draw fossils from a verbal description

Topic: Enhancing pupils' skills of description and interpretation using photographs of fossils

Age range of pupils: 16 years upwards

Time needed to complete activity: About 30 minutes, depending on depth of discussion

Pupil learning outcomes: Pupils can:
- examine photographs of fossils carefully and describe them intelligibly;
- listen carefully to a verbal description and interpret it in a drawing;
- enhance their observational skills as a prelude to field work.
- use the properties to identify the fossil.

Context: This could form a useful revision activity, once pupils have studied fossils. *Answers to the matching exercise are:*

A3, B6, C10, D1, E8, F11, G2, H12, I7, J5, K9, L4

Following up the activity:
- Adopt the same approach to real specimens, if you have them.
- Ensure that pupils use the same careful description and interpretation approach to geology in the field.

Underlying principles:
- This strategy provides training in careful observation and interpretation of all relevant features.
- Being obliged to give a verbal description encourages careful observation, to ensure that clues are not missed.

Thinking skill development:
Verbal dexterity and metacognition are encouraged by the need to give intelligible verbal descriptions and to interpret from them**.** Applying the activity to real specimens or to the field situation is a bridging activity.

Resource list:
- Card sets of Photographs, Prompt Cards and Description Cards, cut out from those shown above.
- If real specimens are available these may be used instead, with appropriate matching descriptions drawn up by the teacher (although

it is harder to hide real specimens from each other).
- A ruler per pair might encourage accurate observation and description.

Useful links:
See the table below for other Earthlearningidea activities in the “Picturing” series.

Source: Written by Peter Kennett of the Earthlearningidea Team.
Photo D is P521034 and J is P549553 GeoScenic | Image Details – (bgs.ac.uk)
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Picturing……

Earthlearningidea has compiled a series of activities involving examination of photographs of geological interest and their careful verbal description to others. This table will be updated as fresh activities are added. All titles begin with: “Picturing……”

Title	Sub-title
Puzzle structures	Visualise and draw sedimentary structures from a verbal description
Trace fossils and other strange shapes	Visualise and draw trace fossils and sedimentary structures from a verbal description
Igneous rocks – 1	Visualise and draw igneous rocks from a verbal description
Igneous rocks – 2	Visualise and draw igneous rocks from a verbal description
Metamorphic rocks	Visualise and draw metamorphic rocks from a verbal description
Tectonic structures – 1 faulting	Visualise and draw fault structures from a verbal description
Tectonic structures – 2 folding	Visualise and draw fold structures from a verbal description
Minerals -1	Visualise and draw minerals from a verbal description
Minerals -2	Visualise and draw minerals from a verbal description
Fossils -1	Visualise and draw fossils from a verbal description
Fossils -2	Visualise and draw fossils from a verbal description
Landforms 1	Visualise and draw landforms from a verbal description
Landforms 2	Visualise and draw landforms from a verbal description
Landforms 3	Visualise and draw landforms from a verbal description
Landforms 4A	Visualise and draw landforms from a verbal description
Landforms 5B	Visualise and draw landforms from a verbal description