Branching Database

Learning objectives

- to be able to group organisms according to observable features
- to identify similarities and differences between similar organisms
- to group animals and explain the criteria on which the groups are based
- to understand that some questions have only yes/no answers and have to be phrased carefully
- to use a tree diagram to organise information

You will need:

- Strips of paper to record questions
- Red and green paper arrows
- Illustrations of fossils cut out (see last pages of this resource for the images)
- Blutac
- **Optional:** Computers with Powerpoint or branching database software

Introduction

Play "I'm thinking of a fossil creature". Pupils ask questions to discover what you are thinking of but you can only answer "Yes" or "No". Repeat with pupils choosing a fossil. Discuss how the creatures can be grouped using different criteria – some have legs, or horns, or shells, etc. These can be subdivided, e.g. by how many legs, type of shell.
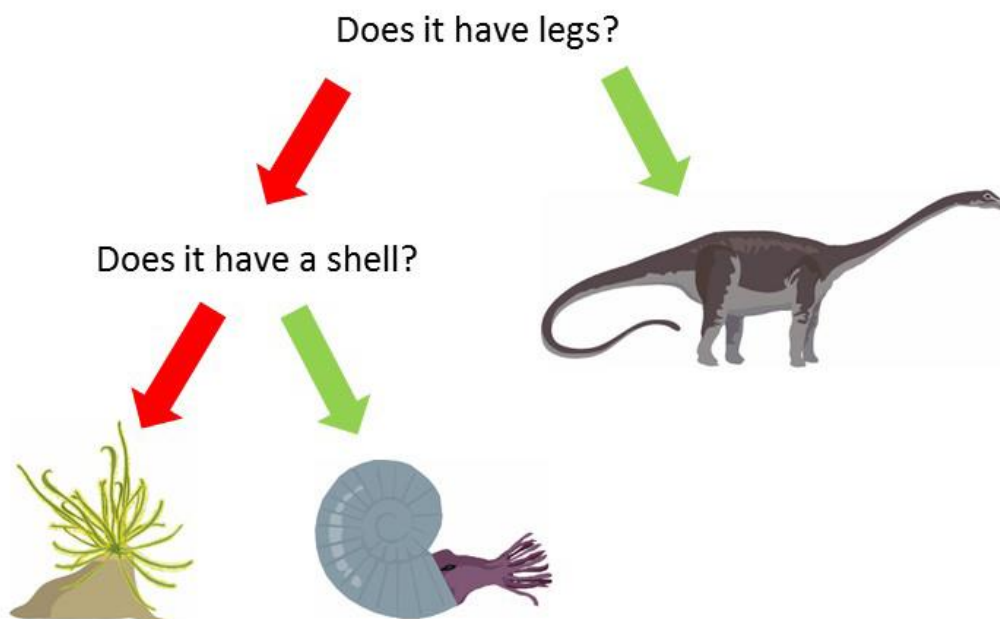
Activity

Use a set of red arrows for 'no' answers and green arrows for 'yes' answers. Demonstrate how to construct a binary tree. Select two fossil creatures (e.g. dinosaur and ammonite) and ask a "yes or no" question to distinguish between them, e.g. "Does it have legs?" Write the question on a question strip.

Put down a red and a green arrow leading from the question strip. Put the dinosaur

at the end of the green (yes) arrow and the ammonite at the end of the red (no) arrow.

Does it have legs?
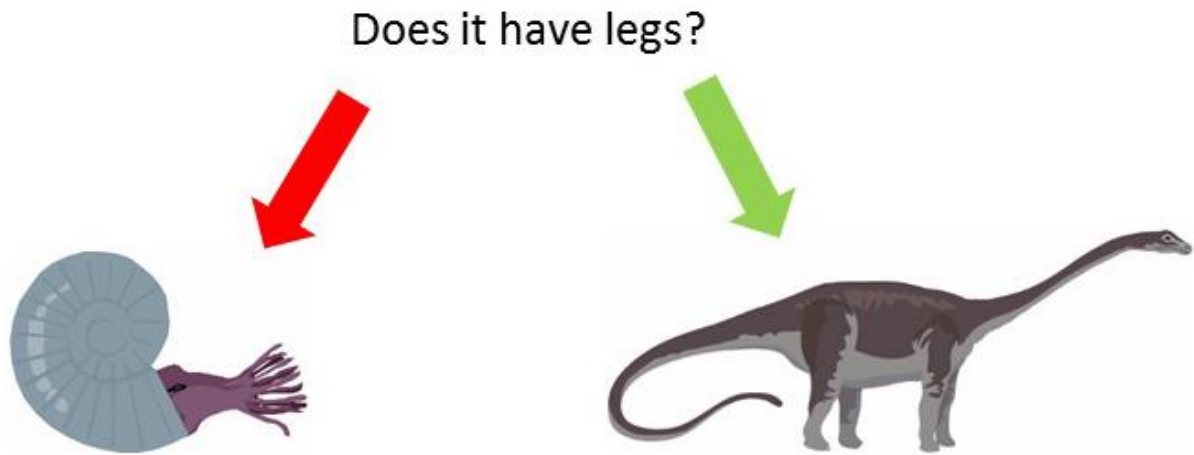
Now choose another fossil creature such as crinoid. Ask the first question again. This time the answer will be 'no'. Follow the 'no' arrow and construct a question to distinguish between the ammonite and the crinoid. The question might be "Does it have a shell?" Position this question strip at the end of the red arrow with a red and green arrow leading from it. The crinoid should follow the red 'no' arrow and the ammonite should follow the green 'yes' arrow.

Does it have legs?

Does it have a shell?

In small groups, pupils can construct their own fossil trees, repeating this process with each fossil creature in turn.

This activity could be carried out with the whole class on an interactive whiteboard, or in groups on computers, combining arrow autoshapes and textboxes. The activity forms a useful introduction to using a software package to construct a branching database. The resulting trees can be printed out for display.
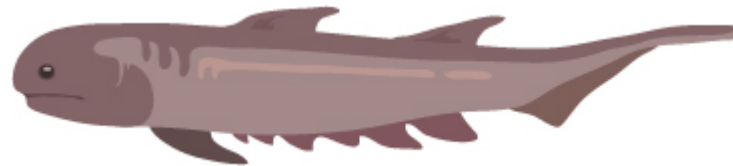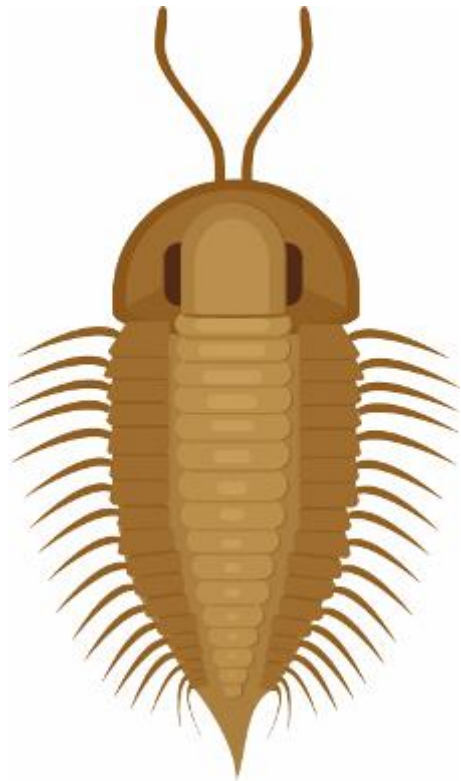
Images for branching database

Fish

Actinopterigii
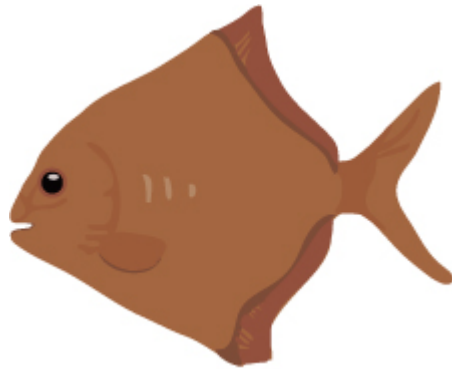
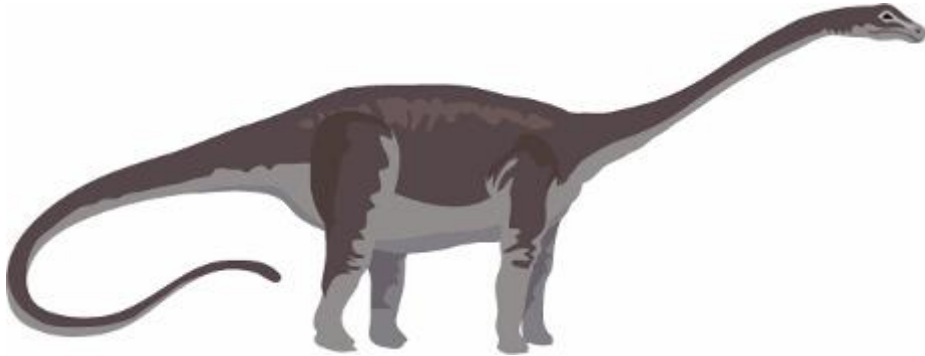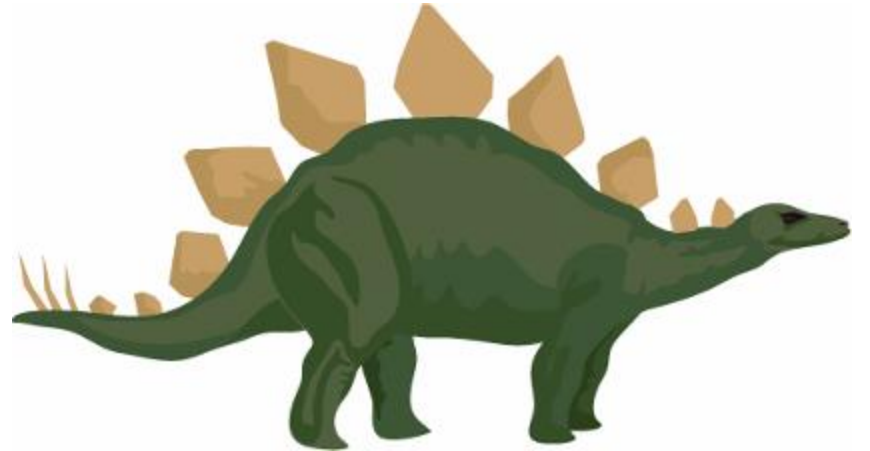Climatius

Sarcopterygii

Placodermi
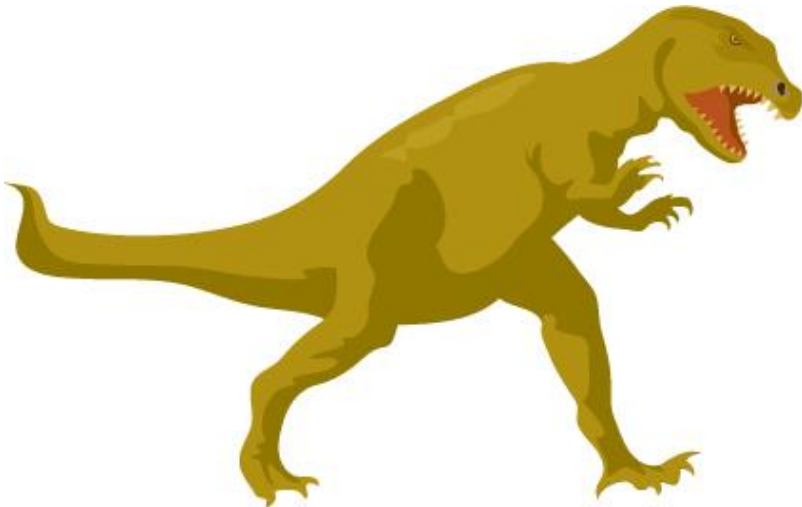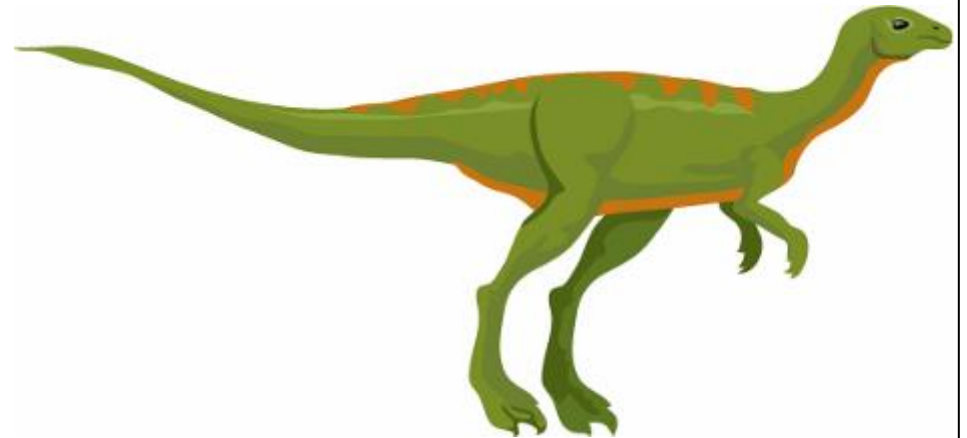
Eurypterus

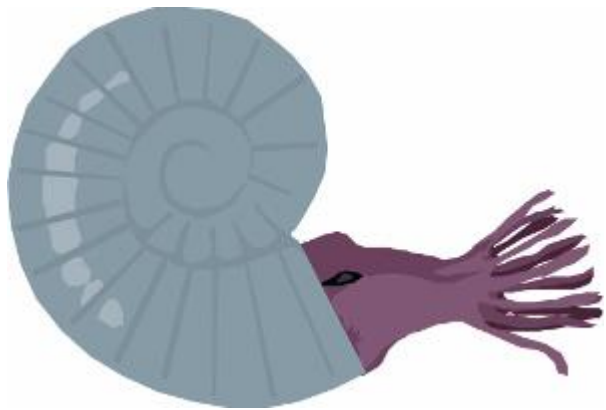Trilobite

Crinoid
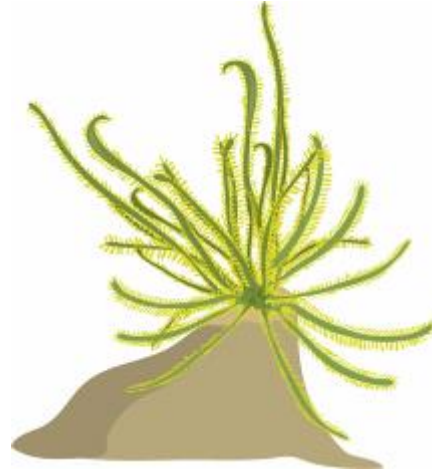
Crinoid

Shark
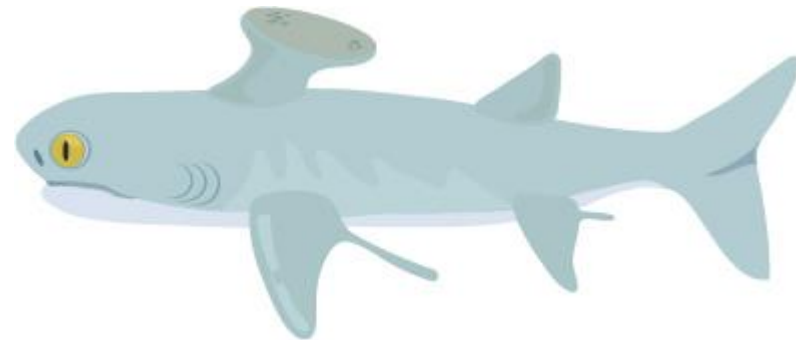
Dinosaurs

Diplodocus

Stegosaurus

Allosaurus

Dryosaurus

Ammonite

Belemnite