
# Sorting Dinosaurs

**Learning Objectives:**

- To research how dinosaurs are classified into broad groups according to common observable characteristics and based on similarities and differences;
- To give reasons for classifying dinosaurs based on specific characteristics.

**Science Skills:**

- Use Internet sources or texts to collect information about dinosaurs;
- Close observation of drawings and photos;
- Use observable features to compare and classify different extinct animals.

**Resources:**

- Template of 10 top trumps style card per pair of children
- Access to books or internet sites (in particular Natural History Museum website – Dino Directory section)
- PowerPoint "Sorting Dinosaurs"

**What you should know before you start**

Mary Anning was a STEM Sister because she was a self-taught expert on fossils of marine reptiles, molluscs and other marine creatures in the 1800s. She was not recognised for her studies, her observations and her theories as she was a woman. The rich gentlemen who came to learn from her often published her ideas as their own.

The large vertebrate fossils which Mary Anning found on the beach in Lyme Regis were actually marine reptiles rather than dinosaurs. They were alive at the time of the dinosaurs but are adapted to live in the sea rather than on land. Dinosaurs and the marine reptiles were all living during the Triassic (252-201 Million years ago - MYA), Jurassic (200-145 MYA), and Cretaceous (145-100 MYA) periods with their peak being in the Jurassic.

Dinosaurs differ from modern reptiles in their gait – the way their legs are positioned. Dinosaurs have their legs under their bodies whereas modern reptile legs are wider apart and are positioned out to the sides of their bodies.

Dinosaurs are classified into particular groups based on their features but, as new evidence is uncovered, the classification can change. This brief video shows some proposed ideas about re-classifying dinosaurs. https://www.nhm.ac.uk/discover/dinosaur-family-tree-gets-major-makeover.html

This lesson covers three groups:

- Ornithopods
- Therapods
- Sauropods

**WARM UP** – Observation Skills

Display *Slide 1* in the 'Sorting Dinosaurs' PowerPoint.

Ask each child to focus on one of the modern reptiles and write down as many features as they can see on that reptile e.g. number of toes, colour etc.

Ask a few to list the details they have noted without saying the name of the reptile – is it enough to work out which reptile they chose? If not, play again until they are really looking closely at the reptiles. Encourage them to really observe the features.

**Introduction**
Show the children *Slide 2* of the PowerPoint - 3 different types of dinosaur: an ornithopod (Three-Toed Iguanodon), a sauropod (Apatosaurus), a theropod (Tyrannosaurus Rex) plus an icthyosaur and a plesiosaur - swimming reptiles.

Ask:

- What differences can you see between their body shapes, number of toes and other observable features?

Now look back at *Slide 1* of the modern reptiles to compare and note the difference in their stance: modern reptiles have a sprawling stance with their legs spread wide whilst dinosaurs have an upright stance with their legs positioned under their bodies – more like a bird.

**MAIN TASK**
**Complete a set of 10 'extinct reptiles' top trumps style cards and play the game with a friend.**

The children complete a set of 10 top trumps per pair, drawing in a picture and filling in the numbers by researching the dinosaurs and marine reptiles on the internet. All of this information is available on https://www.nhm.ac.uk/discover/dino-directory.html

Play a few games of top trumps using their cards. In this way, the children will familiarise themselves with the features of dinosaurs and other extinct reptiles.

Display *Slide 3*.

Ask:

- Can you use these clues (on *Slide 3*) to sort your top trumps cards into 4 groups?

These are the correct groupings:

| **1 ornithopod** | **2 therapod** | **3 sauropod** | **4 something else** |
|---|---|---|---|
| 3 toed Iguanodon (Ornithopod) | Tyrannosaurus Rex(therapod) | Diplodocus (sauropod) | Ichthyosaur (marine reptile) |
| | Camptosaurus (therapod) | Apatosaurus (sauropod) | Plesiosaur (marine reptile) |
| | Giganotosaurus (therapod) | Brachiosaurus (sauropod) | Triceraops (thyrephora) |

Show *Slide 4* and discuss their groupings. Focus on Triceratops.
Ask:

- What features might all the dinosaurs in the group Thyrephora have?

(Thyrephora – herbivorous, some had teeth, others had beaks, had dermal plates or spikes along their backs and walked on two or four legs.)

**Extension task:**
Some children could be given the template with two additional blank spaces for them to find two more dinosaurs to include in the game.

**Finale:**
Mary Anning lived in Lyme Regis on the Dorset coast. She found a variety of fossils including a plesiosaur, an ichthyosaur, and extinct varieties of clams and mussels. What does that tell you about the history of the land in that area?

Look at the painting below. It shows an artist's impression of what Lyme Regis might have looked like in the time of the dinosaurs

https://oumnh.ox.ac.uk/sites/default/files/oumnh/images/media/icthyosaur_0.jpg

Ask:

- Can you spot an ichthyosaur?

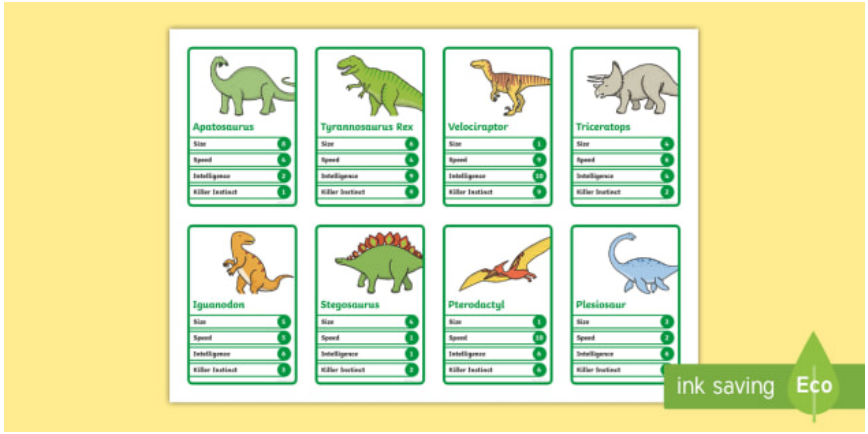
**REVIEW**

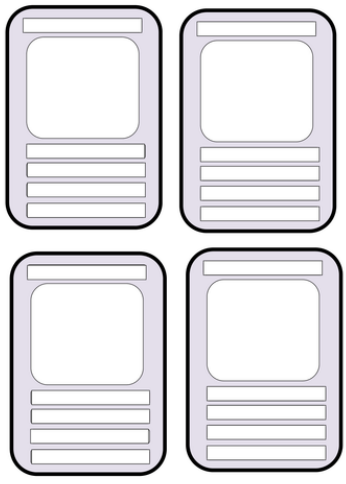
**ALL**: Can identify the ten animals they have researched and identify some features that animals in the same group have in common.
**MOST:** Can explain why each animal belongs in each particular group.
**SOME**: Can accurately say if any other dinosaur would fit into any of the three groups they studied, giving reasons. Can explain why plesiosaurs and ichthyosaurs do not fit into the dinosaur category.

**Resources to be made:**

Top trumps template with the 10 reptiles on it. Could be 1 sided to print on card or have a printed back so that the image on the front doesn't shine through.

This type of thing – we need the empty spaces to fill with information as shown in the table below.



Sections for cards:

| | |
|---|---|
| Draw a quick picture: | |
| Name | Icthyosaur |
| Length (metres) | |

| | |
|---|---|
| Weight (tonnes/1000kg) | |
| Carnivore (3) omnivore (2) or herbivore (1) | |
| Number of toes | |
| When this dinosaur first appeared (millions of year ago) | |
| Is it a dinosaur?<br>Yes (1) No (0) | |

Dinosaurs/ marine reptiles on the top trumps template:

- Ichthyosaur (marine reptile)
- Plesiosaur (marine reptile)
- Tyrannosaurus Rex (therapod)
- Camptosaurus (therapod)
- Giganotosaurus (therapod)
- Apatosaurus (sauropod)
- Diplodocus (sauropod)
- Brachiosaurus (sauropod)
- Triceratops (thyrephora)
- Iguanodon (Ornithinopod)

Images all provided in artwork file.

Information on websites to link to this activity:

https://www.nhm.ac.uk/discover/what-are-dinosaurs.html

https://www.nhm.ac.uk/discover/dino-directory.html

https://oumnh.ox.ac.uk/mary-annings-ichthyosaur