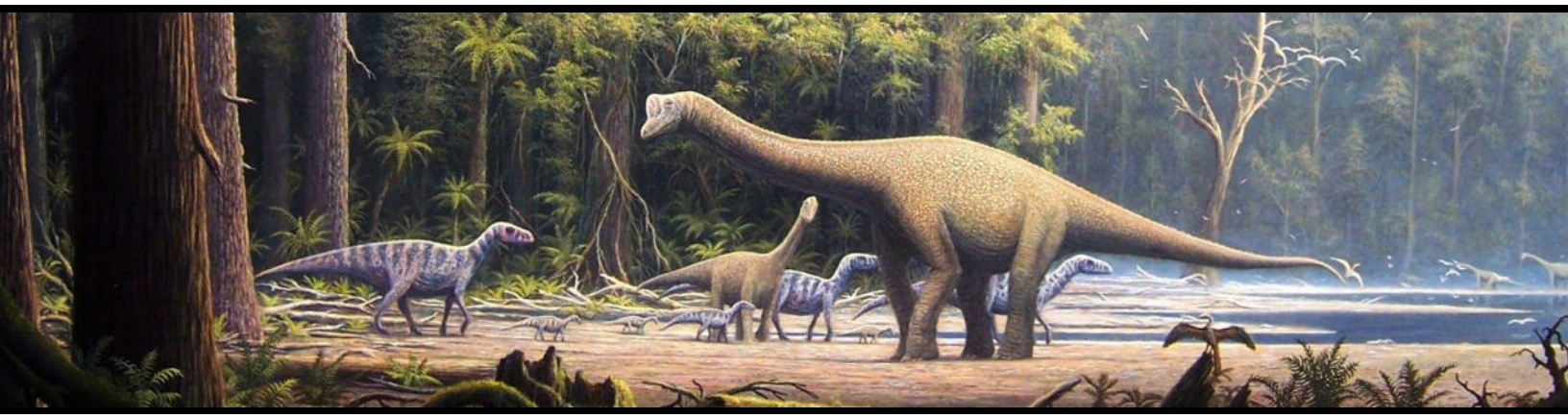
SMART SPIN
Encyclopedias as Adventures

Supported by:
EDUCATE
EDUCATION · RESEARCH · EDTECH
UCL Institute of Education

Dinosaurs Smarty

Dinosaurs ruled the Earth for many millions of years. All that remains of them are fossil evidence that paleontologist dig out of the ground, providing us with clues about these magnificent beasts. Come with us and let's learn what these dino detectives have uncovered. Let's travel back in time, when our planet was a different place, and meet its previous masters.

TO THE COLLECTION >



Smarties are inspirational guides for educational activities. Click on the red button below to know more about them.

Smarties are complemented by our **Smart Spin** online encyclopedia. Click on the green button below to explore it.

SMART SPIN | WHAT'S A SMARTY? | MORE SMARTIES

Table of Contents

General Note

Dinosaurs is such an expansive subject, with so much that we know about these incredible creatures and maybe even more that we don't know (or which scientists still debate about).

We tried to include as much as we can in the collection (and it does include a huge amount and scope, though not as huge as an Argentinosaurus). However, it is far from including everything. For this reason, for the following activities, further research and additional resources are possibly necessary and are definitely encouraged (e.g. Natural History Museum, How Stuff Works, LiveScience, Dino Dictionary, Dinosaur Database).

---

1. Favorite Dino

Use the following questions (and any other questions you'd like) to find out about your learner's favorite dino. These may be used as a guideline for an essay or a discussion.

Spin through the collection and find the 4-5 facts you find most fascinating. A fact might be the size or weight of a dinosaur (for example, the size of the smallest dinosaur is actually quite small, contrary to the common conception of dinosaurs being huge creatures). It might be the timescale of dinosaurs' existence on this planet. It might be a groundbreaking discovery. It might be a mystery still unresolved.

- ➔ Why are these facts so interesting or extraordinary?
- ➔ Which topics did you find these facts in? Which dinosaurs or paleontologists are they related to? Which periods of history or prehistory? Which theories about dinosaurs?

➔ You may want to mind map these facts, or write about them, to find connections between them, and between them and other facts you found or know.

Spin through the Dinosaur Types sub-collection:

Find the 2-3 dinosaurs (species, genus or clade) you like most.

➔ Why are they your favorite dinosaurs? Is it their incredible size or their unusual features? Is it their cute name or fierce attitude?

➔ What are the most interesting facts about the dinosaurs you selected? When did they live? What did they eat? Who were their “enemies” (e.g. predators, prey)? What unique features did they have? What else can you say about them that is unique to them, as opposed to any other dinosaur?

➔ How quickly can you say all their names three times in a row? ;)

For the questions above you might need to do some additional research beyond the information included in Smart Spin.

Spin through the Paleontologists sub-collection:

Find your 1-2 favorite paleontologists.

➔ What makes these paleontologists so special? What about them do you most appreciate? Is it the magnitude, importance or the number of their great discoveries? Is it their contribution to paleontology, their reputation or ability to communicate with their research? Is it their investigative skills or the interesting story of their life and career?

➔ Which dinosaurs did they unearth and/or name? Which conclusions about their findings (or any other findings by other paleontologists) did they arrive at? Which theories did they come up or help develop?

2. Back in Timeline

SOMETHING TO MAKE

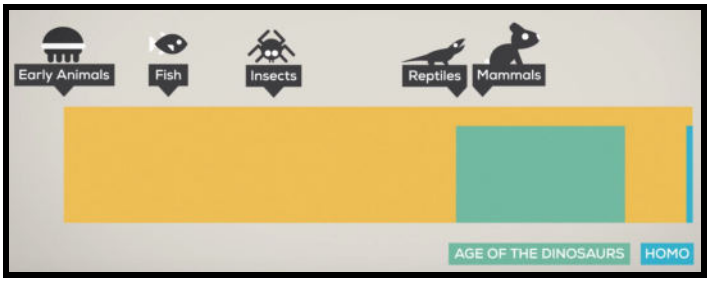
The timescales in which dinosaurs lived is extremely immense. Your learner can prepare a visualization of the periods which these dinosaurs occupied by placing them along a timeline. Note that the topics found in the collection might not include all the information necessary to place the dinosaurs on the timeline, in which case additional research and resources can be used.

Spin through the Dinosaur Types sub-collection*:

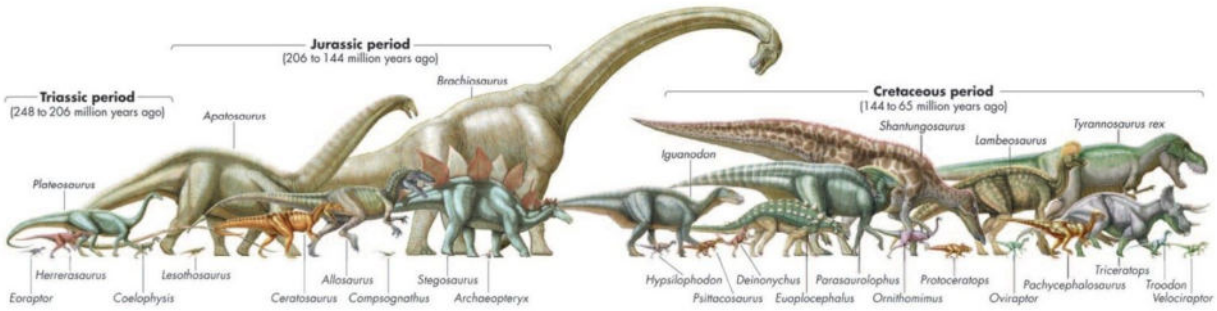
TO THE COLLECTION >

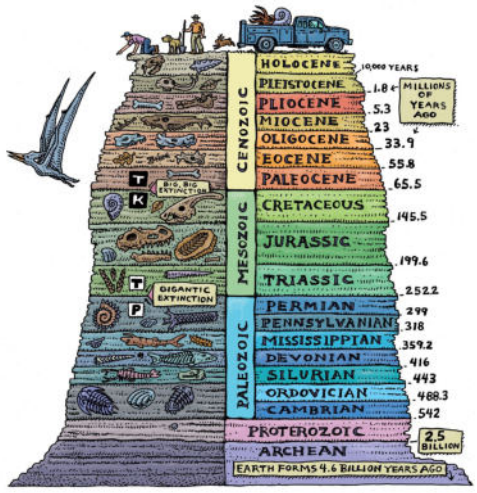
For each one that you find, place it on a timeline based on the period it existed.

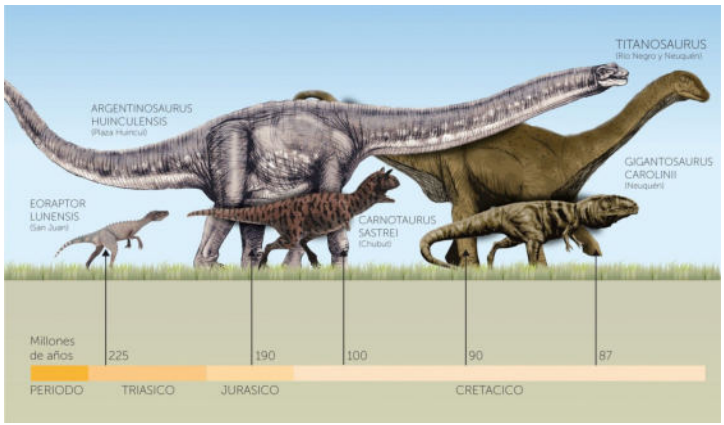
- ➔ You may mark when the clade, genus or species first appeared “on the scene” and when it became extinct. These do not have to be precise points in time, since scientists might only be able to estimate these accurately, and since the rise and fall of these dinosaurs might have happened over a long time.
- ➔ You may divide your timeline into the geological periods which dinosaurs inhabited**. Try to make your timeline to scale (again, you do not need to be so precise). For example, the Cretaceous period spans 79 million years, as opposed to the Jurassic, which spans 56 million years.
- ➔ Speaking of time scales, this is a diagram of how long humans (including very early ones) have been around compared to the age of dinosaurs. Our species has only existed for a small sliver still of the blue section. Check out this video also.



- ➔ You may mark other interesting events that happened during the dinosaurs' reign***. For example, about 200 million years ago, great many dinosaurs have died in what is known as the Cleveland-Lloyd Dinosaur Quarry. For another example, Savannasaurus is a dinosaur from South America, but it entered Australia from approximately 105 million years ago, because at that time polar temperatures allowed for bridges between continents to form.
- ➔ For inspiration:







* You may also include any dinosaurs that you know of that are not in the collection, or that you come across in other resources.

** You may extend your timeline to other periods that didn't include dinosaurs, and include creatures that are not dinosaurs.

*** For this, you may want to spin in the entire collection (and find other resources).

3. Design your Dino

SOMETHING TO DO

In the following exercise, to create an imaginary dinosaur, your learner may become more familiar with the "real" dinosaurs, and explore what makes them dinosaurs.

By now you might know some of the dinosaurs that roamed the earth, but why not design your very own type of dinosaur by using your imagination?

- ➔ You may describe it in words. You may sketch or draw it. You may build it using building blocks, sculpt it using playdough, even model using computer graphics.
- ➔ Your dinosaur may be comical or scary, primitive or well evolved, avian (no, pterodactyls were not dinosaurs; we mean feathered dinos) or aquatic (note that dinosaurs were not really marine animals, though you may refer to other reptiles that lives in water during the mesozoic era, such as mosasaurs and plesiosaurs)
- ➔ You may go into as much detail as you'd like. You may model its skeletal structure. You may describe its behavior, you may sketch its skin pattern and colors. You may provide details about its eggs an individual at different ages.
- ➔ Think about what makes a dinosaur a dinosaur. You may research the many descriptions of dinosaurs and their distinguishing anatomical features. Try to give your dinosaur at least 2-3 features that are unique to this clade of animals called Dinosauria, yet common among its members. For example theropods are a dinosaur suborder characterized by hollow bones and three-toed limbs.
- ➔ You may combine features from several dinosaurs (e.g. short arms, formidable tail) for a "dino chimera". You may also borrow features from other animals (zebra stripes? elephant trunk?), or from fictional creatures (fire breath? robot arms?), but try to keep your creation mainly dinosaur.

- ➔ You can play around with the sizes of your dino's features (for example, you can give it a huge head and tiny feet, just make sure it can balance itself when it walks). You can play around with its entire size (for example, make one of the biggest dinosaurs and make it really tiny, or vice versa).
- ➔ Name your dinosaur using the naming conventions and practices used by paleontologists.
- ➔ Some inspiration:

4. Dinos on my Mind

SOMETHING TO WONDER

The following questions can be used to inspire a discussion, an essay, or simply to think about as your learner explores the world of dinosaurs.

➔ What do you think caused the dinosaur extinction? What evidence are you basing your opinion on? Why did dinosaurs become extinct while other animals from their time survived to this day? How do you think the world would look like today if dinosaurs had never gone extinct? Would we get along? How do you think our human civilization can protect itself from a similar catastrophe?

RELATED TOPICS

★ Dinosaurs Extinction
★ Georges Cuvier

➔ Should we try to use genetic engineering to bring back extinct species of dinosaurs?

RELATED TOPICS

★ Extinction Revivalist
★ Jack Horner
★ Chickenosaurus
★ Jurassic Park

➔ Other than fossils, what other evidence do scientists have that reveal information about dinosaurs? What tools and theories are paleontologists using to analyze fossils and any other evidence? What else do you think can teach us about these long gone animals and that bygone era? Can you think of new or future technologies (a time machine maybe?) that can help us discover more?

RELATED TOPICS

★ Fossil

➔ Do you believe birds evolved from dinosaurs? What is the strongest evidence that this is fact? How many of the dinosaur species had feathers, in your opinion? Which specific ones were you able to find that probably had feathers, and for which species the science is still uncertain?

RELATED TOPICS

★ Origin of Birds
★ Feathered Dinosaurs
★ Dinosaur Evolution

- Why do you think dinosaurs dominated the mesozoic era over other animals? Was it their size? Was it their variety? Was it a coincidence? Did they really ruled the earth (consider the paleontologist Stephen Jay Gould's quote: "What you see is that the most outstanding feature of life's history is a constant domination by bacteria.")

RELATED TOPICS

- Era of Dinosaurs

➔ Do you believe dinosaurs were warm-blooded? What is the strongest evidence that this was the case?

RELATED TOPICS

★ Robert T. Bakker

➔ What theories about dinosaurs, not yet confirmed, do you support? Why?

5. Recommendations

Books 

★ Dinosaurs
- “The Rise and Fall of the Dinosaurs: The Untold Story of a Lost World”, by Steve Brusatte
- “Encyclopedia Prehistorica Dinosaurs: The Definitive Pop-Up”, by Matthew Reinhart
- “Too Big to Walk: The New Science of Dinosaurs”, by Brian J. Ford

★ Mr. Bones
- Nonfiction: “Barnum Brown: Dinosaur Hunter”, by David Sheldon
- Biography: “Barnum Brown: The Man Who Discovered Tyrannosaurus rex”, by Mark Norell and Lowell Dingus
- Nonfiction: “I Married a Dinosaur Hardcover”, by Lilian MacLaughlin Brown

★ Jack Horner
- Nonfiction: “How to Build a Dinosaur: Extinction Doesn't Have to Be Forever”, by Jack Horner. Horner's 2009 book describes his plan to recreate a dinosaur by genetically "nudging" the DNA of a chicken. Horner's idea for the project came from an early script for the film Jurassic World. It was originally planned to be released simultaneously with Jurassic World as a scientific companion volume.
- Nonfiction: “Dinosaurs - The Grand Tour: Everything Worth Knowing about Dinosaurs from Aardonyx to Zuniceratops”, by Keiron Pim and Jack Horner

★ Ernst Stromer
- Nonfiction: “Hunting Dinosaurs”, by Louie Psihoyos
- Nonfiction: “The Lost Dinosaurs of Egypt”, by William Nothdurft

★ Mary Anning
- “The Fossil Hunter: Dinosaurs, Evolution and the Woman Whose Discoveries Changed the World”, by Shelley Emling
- “Stone Girl Bone Girl: The Story of Mary Anning of Lyme”, by Laurence Anholt and Sheila Moxley
- “Jurassic Mary: Mary Anning and the Primeval Monsters”, by Patricia Pierce

★ Stephen Jay Gould
- Wonderful Life: The Burgess Shale and the Nature of History, by Stephen Jay Gould
- The Mismeasure of Man, by Stephen Jay Gould
- The Hedgehog, the Fox, and the Magister's Pox: Mending the Gap between Science and the Humanities, by Stephen Jay Gould

★ Origin of Birds
- Nonfiction: “Discovering Dinosaurs: Evolution, Extinction, and the Lessons of Prehistory” by Mark Norell, Lowell Dingus and Eugene Gaffney

★ Bone Wars
- Graphic novel: “Bone Sharps, Cowboys, and Thunder Lizards”, by Jim Ottaviani

★ Robert T. Bakker

- In 1986, Bakker published his groundbreaking work entitled, “Dinosaur Heresies: New Theories Unlocking the Mystery of the Dinosaurs and their Extinction”. In this book he argues that dinosaurs were not slow-moving, slow-witted, cold-blooded creatures as represented by the then accepted paleontologic and scientific community. Instead he argued that they were, at least in some cases, warm-blooded giants that were well equipped to roam and dominate our planet for 200 million years. He also argued in the book that dinosaurs are the ancestors of birds, a theory that is now apparently not as hotly questioned as it was when the book first came out.

★ Kenneth Lacovara

- “Why Dinosaurs Matter”, by Kenneth Lacovara

★ Jurassic Park

- Novel: Jurassic Park, by Michael Crichton

Films 

★ Jack Horner

- Documentary: "Dinosaurs Decoded", National Geographic (2009)
- Documentary: “Valley of the T. rex”, Discovery Channel (2001)

★ Allosaurus

- Documentary: “Ballad of Big Al” (2000)

★ Dinosaurs

- Film: Dinosaur (2000; by Walt Disney Pictures)
- Documentary: “Bizarre Dinosaurs” (2009; by National Geographic)
- Film: “March of the Dinosaurs” (2011)
- Mini-series: “Walking with Dinosaurs” (1999) and “Chased By Dinosaurs” (2002), by BBC
- “Dinosaur Planet” (2003; by Discovery Channel)

★ Jurassic Park

- Film: Jurassic Park (1993)
- Film: The Lost World: Jurassic Park (1997)

❖ The two original films in the franchise, while not always accurate in their depiction of dinosaurs (see topic for more about the science behind the movies) are sure to pique the interest of anyone who is even remotely interested in dinosaurs (as long as your learner is old enough to watch them).