

# THE DINOSAUR QUEST OF DR. T-REX



TM



**K-6**

# STUDY GUIDE



# INTRODUCTION



Dear Educators,

This pack was created as a study guide for students grades K-8 preparing to see the **Dinosaur Quest of Dr. T-Rex**. It is our hope that by utilizing the materials in this pack, your students will come to the show ready and excited to learn about some of the most fascinating creatures ever to roam the earth!

With a focus on the Cretaceous Period, Dr. T-Rex takes the audience on a tour through the Mesozoic Era—the Age of Dinosaurs. The show is a unique interactive theatre performance that portrays real events that happened during the Cretaceous period (146-65 million years ago), which saw the height of the dinosaurs and the development of flowering plants. It ended with a major extinction and the demise of the dinosaurs and many other prehistoric animals.

This study guide along with the activity pack includes discussion starters, amazing facts, vocabulary words, quizzes and a number of fun activities. Each activity is based around science, writing and the language arts. These activities are designed to stimulate the minds of students as they learn about dinosaurs and channel their imagination and creativity into practical skills that translate to other areas of learning. Combined with a visit to the show, your students will be highly motivated to learn because they'll be excited to discover the spectacular world of dinosaurs while developing the essential skills of writing and reading.

At the show, Dr. T-Rex presents museum quality fossils and realistic dinosaur puppets. These extraordinary life-like creatures stimulate creative thinking and inspire kids to write their own thoughts and feelings about the greatest species that ever lived!

We hope you and your students enjoy their literary and magical journey into the **Dinosaur Quest of Dr. T-Rex!**

**Now, let's travel back to a time about 220 million years before computer games . . .**





## SHOW PURPOSE



### Be **AMAZED** as Dr. T-Rex Reveals the *the Secrets of Creative Writing!*

Creative writing is one of the most important skills a child can learn; it stretches the imagination and offers a wonderful outlet for expression. It helps create orderly thought and can be the basis for a lifetime of clear communication and self-expression.

The first step in a lesson on creative writing in elementary and middle school classes is for the instructor to help students engage their imaginations and develop ideas. *The Dinosaur Quest of Dr. T-Rex* is the perfect starting point to help students kick-start their imaginations and begin the flow of creative ideas. Kids are fascinated by dinosaurs and are naturally inquisitive about where they came from and where they have gone. A school-time matinee visit to *The Dinosaur Quest of Dr. T-Rex* with after show discussion adds to the bank of ideas and further enhances the information students bring to the writing assignment they will complete right there in the theater!

#### The Dinosaur Quest of Dr. T-Rex is a Proven Success

*The Dinosaur Quest of Dr. T-Rex* was constructed with specific goals for literacy and language arts learning in mind. As we created the program, we kept in mind what excites kids, and more importantly, how we could get them excited about learning. Our objectives for the show include:

- To explore the functions and values of reading and writing.
- To stimulate imagination and jump-start the creative writing process.
- To clarify thinking.
- To help students search for their personal writing voice and identity.
- To teach students core standards in Prehistoric World curriculum.

Watch Dr. T-Rex harness the imagination of your students in a fun-filled 60-minute program that motivates young minds to discover the spectacular world of dinosaurs thru the essential skills of writing and reading. Evaluations collected from educators after the performance guarantee your students will respond well to:

- High-energy talent with the ability to connect with students in all grades.
- Realistic, life-size dinosaur puppets and large museum quality fossils.
- Creative and humorous delivery with audience participation.
- Amazing acts of astonishment.



*Dr. T-Rex invites kids from the audience to feed his life-like Troodon puppet.*



# DIGGING UP BONES



**What is a DINOSAUR?** The word "dinosaur" comes from two Greek words meaning "terrible lizard." Dinosaurs were reptiles that appeared about 230 million years ago. They evolved into amazing varieties of shapes and types: some were giants, others small: some herbivores, others carnivores. They had horns, crests, bony plates, and even feathers as protection. The dinosaurs disappeared in the Cretaceous Period but left behind descendants with feathers that could fly—BIRDS!

**Where did the dinosaurs live?** Scientists believe that about 250 million years ago, Dinosaurs originated on a single supercontinent known as Pangaea. This supercontinent was made up of all the continents on Earth. Over time, these continents broke apart, and slowly drifted away from one another. This drift continues, so that the form the Earth takes today is not by any means the final shape of our Earth.

**What is Paleontology?** Paleontology is a combination of Geology (study of rocks) and Biology (Study of Life). A Paleontologist is a scientist who studies fossils; some study fossil plants, some study fossil fish, some study fossil mammals, and some study dinosaurs.

**What is a fossil?** The word fossil comes from the Latin word fossilis, which means, "dug up." Fossils are the preserved remains of plants or animals. For such remains to be considered fossils, scientists have decided they have to be over 10,000 years old. There are two main types of fossils: body fossils and trace fossils. Body fossils are the preserved remains of a plant or animal's body. Trace fossils are the remains of the activity of an animal, such as preserved trackways, footprints, fossilized egg shells, and nests.



## Most fossils are excavated

from sedimentary rock layers. Sedimentary rock is rock that has formed from sand, mud, and small pieces of rock. Fossils have been found on every continent on Earth.

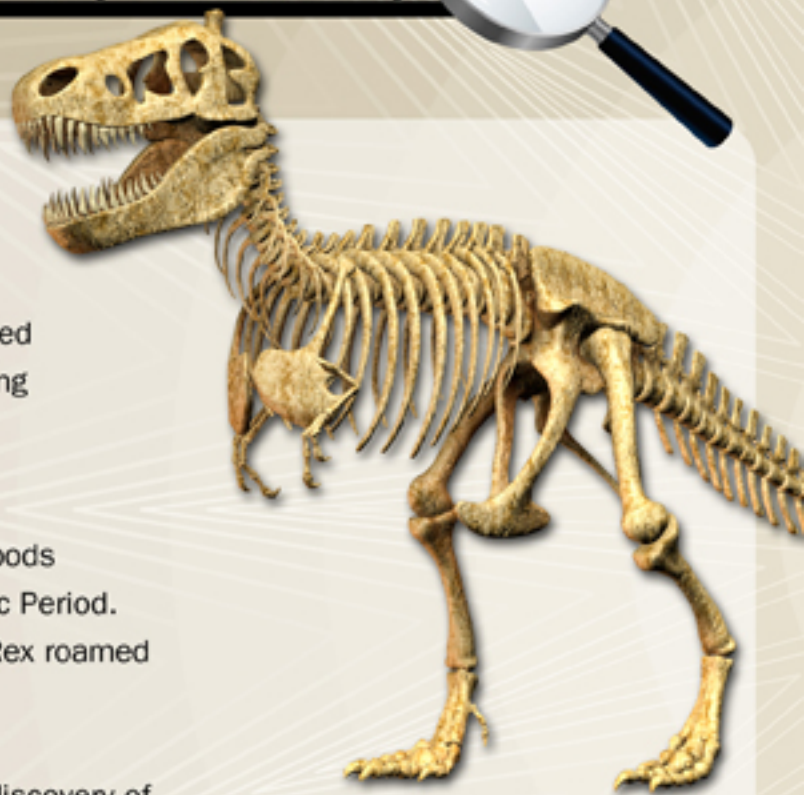
## Paleontologist Tools

There are many useful tools a Paleontologist uses to dig up fossils:

- Rock Pick
- Sledge Hammer
- Chisels
- Brushes
- Back Packs
- Cloth Bags
- Compass
- Camera
- Meter Stick
- Magnifier



## CARNIVORES (Meat-Eaters)



**Theropod** means “beast feet.” They were small and large **carnivores** or meat-eating dinosaurs. Even though short and useless arms were a common trait, they had sharp teeth that curved inward to hold their prey, and powerful bone crunching jaws. Theropods were all **bipedal** which means they walked on two feet.

Theropods appeared in the Triassic, but large theropods such as the Megalosaurus dominated in the Jurassic Period. But the most famous dinosaur, the Tyrannosaurus Rex roamed the Earth in the Late Cretaceous Period.

**Megalosaurus** (*MEG-uh-lo-SAWR-us*) The discovery of Megalosaurus changed the way scientists looked at Earth’s past forever, since they then realized that humans weren’t the first creatures to walk on this planet. Paleontologist William Buckland named the new animal Megalosaurus, meaning ‘**big lizard**’, which is more or less what he thought it was.

**Tyrannosaurus rex** (*TIE-ran-oh-SORE-us-rex*) ‘Tyrannosaur’ comes from the Greek word meaning ‘**tyrant lizard**’, while the word rex is Latin for ‘**king**’. Fossil evidence shows that this ferocious predator stood over 13 feet tall at the hips and 40 feet long (*the length of a school bus*) with a huge tail to balance its giant skull. The T-rex had a very good sense of smell. It could smell its prey up to one mile away. Its forward pointing eyes, which gave it better depth perception, supports evidence that it was a great hunter. This “**apex**” predator (biggest, fiercest predator of its time) ran about 20 miles per hour and could cover 15 feet in one step.

**Spinosaurus** (*SPINE-oh-SORE-us*) means ‘**spine lizard**’. It was the the largest carnivore that ever lived and one of the scariest-looking animals of all time. Fossils found in North America show that it had a huge 5 foot tall sail on its back. The narrow snout and lower jaws which are similar to those of modern-day crocodiles, helped it reach into water and grab large fish. Spinosaurus was probably a good swimmer.

**Troodon** (*TROH-o-don*) means ‘**wounding tooth**’. A human-sized theropod of the Cretaceous Period, the Troodon has become the poster lizard for dinosaur intelligence. Its brain and eyes were similar in size to that of an ostrich. Its keen predator senses, particularly sight and hearing, along with fast speed, helped to make it a highly successful hunter.



# THE RISE OF RAPTORS



When most people think of raptors, they picture the lizard-skinned, big-clawed dinosaurs from the movie *Jurassic Park*. Like other theropods, they ran on their hind legs. Each back foot had a large, curved claw that was held up off the ground. These small to medium size dinosaurs were equipped with relatively big brains, three-fingered hands, and a huge claw on each of their hind feet, which they used to slash and disembowel their prey.

**Utahraptor** (*YOU-tah-WRAP-tore*) lived during the Early Cretaceous Period. Utahraptor's claim to fame is that it was the largest raptor ever to walk the earth; adults measured about 25 feet from head to tail and weighed about 1,000 to 2,000 pounds. Befitting their kinship with the first prehistoric birds, most, if not all, raptors were covered with feathers, at least during certain stages of their life cycles.

**Velociraptor** (*vel-OS-a-rap-ter*) The Velociraptor lived at the end of the Cretaceous Period. It is most famous for its role in the movie *Jurassic Park*. However, in the movie it is shown to be much larger than the actual dinosaur was. The Velociraptor was about 3 feet tall and 6 feet long from the tip of its tail to its nose. Covered in feathers, it had hollow bones like a bird making it fast and lightweight. With a large brain compared to its body size, it was likely one of the most intelligent dinosaurs that hunted in packs and killed its prey with sickle shaped claws on its rear feet.

**Deinonychus** (*dye-NON-ee-cuss*) means **'terrible claw'** after the sickle-shaped talon (big claw) on each hind foot that was probably used to inflict deep stab wounds on its prey. It was about 11 feet from head to tail and was an agile predator. A paleontologist, John Ostrom, commented on the similarity of Deinonychus to modern birds. He was the first to connect that birds evolved from dinosaurs. Scientists soon gathered other intriguing physical evidence, finding that Deinonychus and Velociraptor bones had air pockets and flexible wrist joints just like birds of today.





**Archaeopteryx** (*ar-kee-OP-ter-ix*) is the most famous fossil in the world. Scientists figured out that birds came from the theropod dinosaurs by comparing the shapes of bones of birds like **Archaeopteryx** with the fossils of theropods like **Velociraptors**. These animals all had S-shaped necks. They walked on two legs with three big toes pointing forward. Their knees were always bent as they walked. Some theropods even had feathers like those of our modern birds.



## What did dinosaur eggs look like?

Dinosaur eggs had hard shells like present-day reptiles. Some eggs were round, while others were shaped more like potatoes. There were eggs smaller than a chicken's or the size of a bowling ball, like the eggs of the duckbill Hypacrosaurus. Some dinosaur parents sat on their eggs in order to protect them from predators. Fossil remains show us that many dinosaurs nested in colonies. We have learned a lot of information from discoveries of nests, with unhatched eggs and baby skeletons.



## Hypselosaurus eggs (*hip-sell-oh-SAW-rus*)

are special for two reasons; they were the first dinosaur eggs ever found and they are the largest dinosaur eggs known to date.

## Did dinosaurs take care of their eggs?

Some dinosaurs did look after their babies, until they were old enough to look after themselves. Some collected food for their newly hatched young and fed it to them, like birds

**Egg hunters:** Some dinosaurs might have become extinct because their eggs were eaten at night while parents slept.

**FUN FACT:** The all-time record for the biggest eggs goes to a bird called *Aepyornis*, the 'elephant bird', that became extinct a thousand years ago.



**Iguanodon** (*ig-GWAH-no-don*), meaning 'iguana tooth', was the first herbivorous (plant-eating) dinosaur ever named. Unlike carnivorous (meat-eating) dinosaurs—which have sharp, pointed, curved teeth—Iguanodon had rather blunt, leaf-shaped teeth similar to those of a modern-day iguana. The Iguanodon was an **Ornithopod**, which means 'bird feet'. This name came about because scientists in the late 1800's thought the hind feet looked like a bird's. An ornithopod had a snout that ended in a tough sharp beak like a bird. These dinosaurs had the most teeth of any dinosaur. Ornithopods could move their jaws to chew. Most other dinosaurs could only swallow food in chunks.

**The hands** of an Iguanodon were strong and rigid and could be used for grasping and for walking. It could also stand on its hind legs to reach higher vegetation or fight off rivals and predators. If meat-eating dinosaurs attacked Iguanodon, it could fight back with its spike-like dagger thumbs on each hand.

The Iguanodon lived in big herds in the Early Cretaceous Period. Most adults measured around 32 feet in length, although some could reach up to 43 feet. It weighed in at 11,000 pounds, which is as much as a modern-day Asian Elephant.

**THUMB NOSE!** When scientists discovered remains of Iguanodon, they found a bone shaped like a horn. They put this on Iguanodon's nose. Now they know it is a thumb claw!







# READING LIST



## **National Geographic Kids Ultimate Dinopedia: The Most Complete Dinosaur Reference Ever**

by Don Lessem

*Published 2010 by National Geographic Society*

## **The Enormous Egg**

by Oliver Butterworth

*Published 1993 by Little Brown Books for Young Readers*

## **Danny and the Dinosaur**

by Syd Hoff

*Published 1978 by HarperCollins*

## **Dinosaurs Before Dark**

by Mary Pope Osborne

*Published 2010 by Random House for Young Readers*

## **Dinosaurs Love Underpants**

by Claire Freedman

*Published 2009 by Simon & Schuster Childrens Books*

## **Secret Agent Jack Stalwart: The Escape of the Deadly Dinosaur**

by Elizabeth Singer Hunt

*Published 2007 by Weinstein Books*

## **Eye Witness Fossil**

by Dr. Paul D. Taylor

*Published 2004 DK Publishing, Inc.*

## **Fly Guy Presents: Dinosaurs**

by Tedd Arnold

*Published 2014 by Scholastic Inc.*

## **When Dinosaurs Came with Everything**

by Elise Broach

*Published 2007 by Atheneum Books for Young Readers*

## **Can I Have a Stegosaurus, Mom?**

by Lois G. Grambling

*Published 1998 by Troll Communications*

## **Raptor Without a Cause**

by Scott Ciencin

*Published 2000 by Random House Books for Young Readers*

## **Dawn of the Dinosaurs: Life in the Triassic**

by Nicholas Fraser

*Published 2006 by Indiana University Press*

## **Dinosaur Discover: Everything You Need to Be a Paleontologist**

by Chris McGowan & Erica Lyn Schmidt

*Published 2011 by Simon & Schuster Childrens Books*

[www.kids-dinosaurs.com](http://www.kids-dinosaurs.com)

[www.dinodictionary.com](http://www.dinodictionary.com)

[www.livescience.com](http://www.livescience.com)





# VOCABULARY



- **Fiction** – An invented story that comes from the writer’s imagination.
- **Nonfiction** – A true story based on facts.
- **Adjective** – A word that describes a noun.
- **Subject** – One of two necessary parts of a sentence; the part that contains the subject.
- **Verb** – A word that expresses action.
- **Metaphor** – A figure of speech in which a word or a phrase is used to describe a different thing. A resemblance is implied. *example: "Our house is a zoo!"*
- **Simile** – A figure of speech that directly compares two or more unlike things using "like" or "as."  
*example: "You sing like a bird."*
- **Personification** – A figure of speech in which an animal, object, or idea is given human characteristics.  
*example: "The flowers begged for water."*
- **Synonym** – A word that means the same thing as another word.

**Asteroid** – a large rocky object that orbits the Sun—bigger than a meteoroid but smaller than a planet.

**Bipedal** – describes animals that walk on two hind legs.

**Carnivore** – an animal that eats only meat.

**Cold-blooded** – animals that take on the temperature of their surroundings. They are hot when their environment is hot and cold when their environment is cold.

**Coprolite** – fossilized dung or poop of an animal.

**Cretaceous Period** – the third period of the Mesozoic Era, lasting from 145 to 65 million years ago. An asteroid or comet hit Earth at the end of this period, triggering the demise of the dinosaurs.

**Evolution** – the gradual change in living organisms that occur over the many generations. Evolution may result in new species. Dinosaurs evolved from archosaur ancestors and birds evolved from feathered theropods.

**Extinction** – the dying out of a plant or animal species. Extinction can happen naturally as a result of competition between species, changes in the environment, natural disasters (such as an asteroid striking the Earth), or other factors.

**Fossil** – the remains of a dead organism, preserved in rock. Teeth and bones are more likely to form fossils than softer body parts, such as muscles and internal organs.

**Herbivore** – an animal that eats only plants.

**Invertebrate** – an animal without a backbone.

**Jurassic Period** – the second period of the Mesozoic Era, lasting from 200 to 145 million years ago. During the Jurassic Period, dinosaurs dominated the land, the first birds evolved, and mammals began to spread out.

**Mammals** – a group of warm-blooded vertebrates that feed their young on milk and whose skin is covered in hair or fur. Mammals evolved from cynodont ancestors in the Triassic Period.

**Mesozoic Era** – the era lasting from 252 to 65 million years ago, containing the Triassic, Jurassic, and Cretaceous periods.

**Omnivore** – an animal that eats both plants and other animals.

**Paleontologist** – a scientist who studies the fossil remains of plants and animals.

**Predator** – an animal that naturally preys on others.

**Prey** – an animal that is hunted and killed by another for food.

**Quadrupedal** – describes an animal that walks on four limbs.

**Species** – a class of animals having some common characteristics or qualities; distinct sort or kind.

**Sediment** – material such as sand and mud deposited by wind, water, or ice.

**Theropods** – a group of meat-eating dinosaurs. All theropods were predatory. They typically had sharp teeth and claws and ranged in size from the tiny Microraptor to the colossal Tyrannosaurus.

**Trace fossils** – the signs of prehistoric creatures or their activities rather than remains of the creatures themselves, preserved in rock. Trace fossils include footprints, bite marks, droppings, and eggs.

**Triassic Period** – the first period of the Mesozoic Era, lasting from 252 to 200 million years ago. Dinosaurs evolved in the Triassic Period.

**Vertebrates** – animals with a spinal column or backbone.

**Warm-blooded** – describes an animal that maintains a constant internal body temperature. Mammals and birds are warm-blooded and at least some dinosaurs were, too. Their body temperature does not change with the temperature of their surroundings.