



# Dino Foot Race

## Childhood Learning Objective

**Language Development:** Listening and understanding, speaking and communicating

**Literacy:** Phonological awareness

**Science:** Scientific knowledge

**Math:** Solving problems

**Creative Arts:** Art

**Social and Emotional Development:** Self-concept, self-control, cooperation

**Approaches to Learning:** Initiative and curiosity

**Physical Health and Development:** Fine motor skills

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## Learning Goals/Objectives

Understand the difference between how fast dinosaurs could run

Understand that all living things are categorized

Understand how paleontologists name dinosaurs

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## Background Information

There are different types of paleo-environments that paleontologists work in. From dry deserts to wet marshlands, paleontologists uncover fossils from various time periods and see evidence of their environments in the geologic record. In these fossil records, are where paleontologists find dinosaurs and other fossils.

Paleontologists use different methods of science and math to understand dinosaur behavior. One of these behaviors is movement. Many people may wonder how fast a dinosaur could run and this can be solved based on the fossil record. This activity will show the student how we can calculate the speed of various dinosaurs.

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## Whole Group Classroom Activity

### Materials:

- Dino Foot Race Activity Sheet
- Pencils



- Colored Pencils
- Ruler (with metric, cm)



### Preparation:

1. Print out the Dino Foot Race Activity Sheets, one per student.
2. Purchase pencils, colored pencils and rulers if needed.

### Procedure

1. Explain to the students how paleontologists use the “Hind Limb Index” to calculate speed of animals.
2. Discuss how paleontologists use the metric system for measurements and use cm for measurement for this activity
3. Have the students measure the “human” example on the activity sheet and go over the mathematical calculation with them. Make sure all the students get the correct answer for the human hind limb index.
4. Have the students use the colored pencils and color in the correct bones on the dinosaur legs, using blue, red and green. Red is for femur, Blue is for tibia, and green is for metatarsal. Remember, the tibia is the larger bone in the lower leg! Don’t get it confused for the fibula!
5. After all the students have done the “human” example and colored in the bones on the dinosaur legs, instruct the students to calculate the hind limb index for the dinosaurs on the next page of the activity sheet. They will have to measure each bone first, and then do the calculation.
6. After the students have calculated the hind limb index of each dinosaur, have the students make a bar graph on the third page of the activity sheet. Have the students color each bar on the graph a different color.
7. Discuss in the classroom which dinosaurs were faster and how they compare to the human hind limb index. Can the human outrun any of the dinosaurs?

## Curriculum Integration

### Activity Center #1 – Bone Labeling Activity

#### Materials:

- Bone Labeling Activity Sheet
- Pencils

#### Procedure:

1. Each student is given a Bone Labeling Activity sheet.
2. The students must write down where the bones go on the *Camarasaurus*.
3. The teacher can then talk about Anatomy and how important it is in paleontology.

### Activity Center #2 – Taxonomy Activity



**Materials:**

- Taxonomy Activity Sheet
- Pencils

**Procedure:**

1. Discuss how paleontologists use Greek words to name the dinosaurs.
2. Have the students write the names of the dinosaurs using the Greek letters on the second page of the activity sheet.
3. Have the students translate/decipher the names of the dinosaurs from Greek to English.
4. Discuss how knowing the “root” of the word is important in paleontology and how paleontologists use Greek words to name dinosaurs. Also discuss how other scientists use Greek words to name new species of life as well.

**Activity Center #3 – Dinosaur Name Mix-up****Materials:**

- Dinosaur Name Mix-Up Sheet
- Pencil

**Procedure:**

1. Each student receives a dinosaur name mix-up sheet.
2. The student rearranges the letters to spell out the correct dinosaur/reptile/etc. on the mix-up sheet.
3. This activity helps the students identify letters and the proper use and placement of them to make words.

**Activity Center #4 – Dinosaur Variation Chart****Materials:**

- Plastic Dinosaurs
- Dinosaur Variation Chart Sheet

**Procedure:**

1. Print out the Dinosaur Variation Chart Sheet.
2. Have the students separate the plastic dinosaurs into the various categories.
3. Count the dinosaurs in each category and write these numbers down on the Variation Chart Sheet.
4. Have the students make a graph on the Variation Chart Sheet and see which category of dinosaurs has the highest variations, and which ones have the lowest.
5. Have the students take turns and discuss the variations they found.
6. Compare this to modern animals and talk about how paleontologists use modern zoology and biology for comparison to extinct dinosaurs and how we can use these variations to figure out the dinosaur’s behavior millions of years ago.



## Vocabulary

**Ammonite:** The coiled, chambered fossil shell of an ammonoid.

**Baculite:** Any ammonite of the genus *Baculites*, of the Cretaceous Period, having a straight shell with a spiral tip.

**Dinosaur:** Any chiefly terrestrial, herbivorous or carnivorous reptile of the extinct orders Saurischia and Ornithischia, from the Mesozoic Era, certain species of which are the largest known land animals. Greek for Terrible Lizard.

**Fossil:** Any evidence of past life in the rock record, over ten thousand years old.

**Marine:** Saltwater or freshwater environment.

**Paleontologist:** A scientist who studies fossils over ten thousand years old.

**Paleontology:** The study of ancient life.

**Terrestrial:** Land Environment

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## Resources:

### Children

*Walking with Dinosaurs: A Natural History* by Tim Haines ISBN: 978-0789451873

*Prehistoric Life: The Definitive Visual History of Life on Earth* by DK ISBN: 0756699109

*Dinosaurs – The Grand Tour: Everything Worth Knowing about Dinosaurs from Aardonyx to Zuniceratops* by Keiron Pim ISBN: 978-1615192748

### Teachers

*Dinosaurs: The Encyclopedia* by Donald F. Glut ISBN: 0786472227

*Your Inner Fish: A Journey into the 3.5 Billion Year History of the Human Body* by Neil Shubin ISBN: 0307277453

The Wyoming

### Websites:

[www.wyomingdinosaurcenter.org](http://www.wyomingdinosaurcenter.org)

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

## Dinosaur Descriptions

***Allosaurus:*** Any of various carnivorous dinosaurs of the genus *Allosaurus* of the late Jurassic and early Cretaceous Periods. *Allosaurs* were similar to but smaller than tyrannosaurs.

***Apatosaurus:*** A very large sauropod dinosaur of the genus *Apatosaurus* (or *Brontosaurus*) of the late Jurassic Period. *Apatosaurs* had a long neck and tail and a relatively small head.



***Camarasaurus***: A plant-eating sauropod dinosaur of the genus *Camarasaurus* and closely related genera, having a small head, long neck, and short forelimbs, and reaching a length of 40 feet (12.2 meters)

***Diplodocus***: A huge herbivorous dinosaur of the genus *Diplodocus*, from the Late Jurassic Epoch of western North America, growing to a length of about 87 feet (26.5 meters).

***Stegosaurus***: Type of dinosaur, 1892, from Modern Latin order name Stegosauria (O.C. Marsh, 1877), from comb. form of Greek stegos "roof" (from stege "covering," stegein "to cover," from PIE root \*(s)teg- "cover," especially "cover with a roof" (cf. Sanskrit sthag- "cover, conceal, hide;" Latin tegere "to cover;" Lithuanian stegti "roof;" Old Norse þekja , Old English þeccan "thatch;" Dutch dekken , German decken "to cover, put under roof;" Irish tuigiur "cover," tech "house;" Welsh toi "thatch, roof," ty "house") + -saurus. The back-armor plates in the fossilized remains look like roof tiles.

***Supersaurus***: A huge sauropod dinosaur of the genus *Supersaurus*, of W North America, that reached a length of about 130 feet (40 meters).

***Triceratops***: Any of various dinosaurs of the genus *Triceratops*, of the late Cretaceous Period, having a bony crest on the neck, a long horn over each eye, and a shorter horn on the nose.

***Tyrannosaurus rex***: A large, carnivorous (see carnivore) dinosaur that walked on two legs. Its name is from the Greek words meaning "tyrant" and "lizard" and the Latin word for "king."

