[The Washington Post]

# CURRICULUM GUIDE: DINOSAURS

Volume 2, Issue 5

The Curriculum At The Core Of The Washington Post Newspaper In Education Program

KidsPost

INSIDE

The Washington Post

An Integrated Curriculum Resource Program


## INSIDE

An Integrated Curriculum For The Washington Post Newspaper In Education Program

## Is Capitalsaurus the Real Thing?

*KidsPost Article: "Washington, B.C."*

**Lesson:** Use original documents and multiple sources to form an opinion.
**Level:** Mid- to High
**Subjects:** Science, Reading

### Read

In "Washington, B.C." Michael Farquhar takes students on a journey back to an era when dinosaurs roamed and waters covered this area.

You may wish to give older students "The Past is Present." This full-length feature, which inspired the KidsPost article, appeared in The Washington Post's Sunday Magazine in March 2003. Michael Farquhar examines the neighborhood where the new convention center and City Museum of Washington, D.C., opened their doors. He writes: "...we look out over these two buildings, one just being born, the other gaining new life after a century of use and misuse, and see something static: a mere moment in urban renewal. What we fail to notice is the truth. Time is fluid, each moment inseparable from all moments that preceded it, an endless chain of "right now" that only our puny life spans and monumental self-absorption block from view."

The first section of Farquhar's feature covers the same era as the KidsPost article. Students who read the whole article, glimpse the Mount Vernon Square area from prehistoric time to the founding of the Federal City, through its transitions to today's most recent buildings.

### Read and Discuss

Give students more information about dinosaurs in the D.C. metropolitan area: "Did Dinosaurs Ever Live in the Washington, D.C., Area?" This is a KidsPost "Now You Know" column.

Give students "Washington, B.C." worksheet. Discuss their answers and their responses in the writing portion. Answers to the questions are found at the end of this lesson.

### Analyze

For your background, you may wish to read "Making No Bones About Their Goal: Students Lobby Council to Adopt Specimen as D.C.'s Official Dinosaur." If you have time, students may enjoy reading this article to learn how students can petition their government and bring issues to the attention of officials. The Post editorial, " 'Them Dino Bones,'" also relates to the lobbying done by students from Smothers and Watkins elementary schools.

In January 1999, pupils from Watkins Elementary School on Capitol Hill gathered signatures to change the name of the 100 block of F Street S.E. to Capitalsaurus Street. Ask students why they might have selected that block for a name change. Check a current map of D.C. to see if they were successful.

Give students a copy of "Official Dinosaur Designation Act of 1998" which is found in this guide and at *http://www.dcwatch.com/archives/council12/12-538.htm*. Discuss the format of the bill and the formal language that is

## Official Words

**Asteroid:** Rocky and metallic objects that orbit the Sun but are too small to be considered planets. Asteroids that are likely to collide with Earth are called meteoroids.

**Continent:** One of seven large land masses of the globe

**Continental drift:** The Earth's crust moves several inches a year. In mid-1960s geophysicists developed theory of plate tectonics to explain these movements.

**Erode:** To diminish or destroy slowly; to wear away by action of water, wind or glaciers

**Fossil:** A remnant, trace or impression of an animal or plant of past geological ages that has been preserved in the earth's crust

**Mammal:** Higher vertebrates comprising man and other animals that nourish their young with milk and have skin covered, more or less, with hair

**Quarry:** An open excavation for stone, slate or limestone

**Sediment:** Material deposited by wind, water and glaciers

**Teem:** Present in large quantity, filled to overflowing.

*Definitions are from the American Heritage Dictionary*

## Capitalsaurus

*Continued*

used. Do all the findings agree with information they read in "Washington, B.C."? What new information is given?

Give students "Capitalsaurus and Astrodon," This handout is a small portion of "An Alphabetical Listing Of Our Dinosaur TYPE Specimens At The National Museum Of Natural History Smithsonian Institution." The portion of the document that applies to Capitalsaurus and Astrodon is provided courtesy of the Smithsonian's National Museum of Natural History. The complete document can be found at *http://www.nmnh.si.edu/paleo/dino/dinotypes.htm*.

Explain to students that a "type" specimen is examined very carefully and compared with other specimen to be sure that a new species has been found. The fossil could be another example/finding of a known species. If the fossil is truly distinct, it becomes the "type" or valid example of that species. This report states that Smithsonian scientists believe that Capitalsaurus is not a valid name; scientific study indicates the specimen is either a theropod or a form of saurischian dinosaur.

### Summarize and Evaluate

Students have now read a minimum of three documents: a KidsPost article, "Washington, B.C."; a bill, "Official Dinosaur Designation Act of 1998"; and from a scientific report, "Capitalsaurus and Astrodon." Ask students to summarize the information that each document provides about the Capitalsaurus.

Is the Smithsonian report persuasive? Do students think the name Capitalsaurus should be used?

### Write

Take a stand. After reading and discussing original documents, respond to a question. Here are two possible questions:

Do they think it is right for metropolitan area citizens to use the name and students in school to study about this D.C. discovery, but scientists should not call the dinosaur Capitalsaurus? Do they support the Capitalsaurus remaining the official dinosaur of D.C.?

### Enrichment

Do a crossword puzzle. "D.C. Digs" includes many terms from the article. When finished, students might write about D.C.'s pre-1700's past using words from the crossword puzzle.

2. Visit the Smithsonian. The *Stegosaurus* is back on display at the Smithsonian's National Museum of Natural History. In a year-long effort, the original skeleton was taken down in order to repair and conserve the bones. An accurate plaster cast was made so that the original specimens could be returned to the protection of the museum's collection cabinets. Scientists took the opportunity to update the mount as well. *Stegosaurus* is now in a more realistic, active pose, defending itself against the meat-eating *Allosaurus*.

## In the Know

➤ *http://www.geobop.com/paleozoo/World/NA/US/MD/index.htm*
**Maryland, The Miocene Sea State**
Good overview of fossils and shells of Maryland.

➤ *http://www.geobop.com/paleozoo/World/NA/US/VA/index.htm*
**Virginia, the Mother of Paleontologists**

➤ *http://www.nmnh.si.edu/paleo/index.html*
**Department of Paleobiology, Smithsonian NMNH**
The National Museum of Natural History provides "Discover Dinosaurs!" and "Dinosaur FAQ."

➤ *http://www.nationalgeographic.com/dinoeggs/*
**Dinosaur Eggs**
The National Geographic presents on online exhibit that features an egg hunt and observation of fossil researchers at they "hatch" fossilized dinosaur eggs. After viewing the site, go to the resources and links.

➤ *http://www.sdnhm.org/exhibits/lostworld/index.html*
**San Diego Natural History Museum**
Although The Dinosaurs of Jurassic Park: The Lost World exhibit is closed, this online resource offers lively activities. The interactive "Name That Reptile" reinforces root words and traits of dinosaur groups. "Death of a Nodosaur," "Dinosaur Bytes" and "Finding Fossils" are all worthy stops.

IN PRINT
Elizabeth Levy, J. R. Havlan and Dan McFeeley. *Who Are You Calling a Woolly Mammoth?: Prehistoric America*. Scholastic Paperbacks, 2001. The book ends with the arrival of humans to America. A humorous look at prehistoric North America is given through cartoons, travel tips, diagrams and quizzes.

## Capitalsaurus

*Continued*

3. Do some digging. Divide students into four groups to research dinosaurs and other animal life, climate, soil and water in Washington, B.C. Subtopics are provided.

**Group 1:** Dinosaurs Discovered in D.C. Area
*Archaeornithomimus*, ostrich-like
*Astrodon johnstoni*, Maryland's official state dinosaur
*Capitalsaurus*, D.C.'s official dinosaur
*Dryptosaurus*, a toothy carnivore
*Priconodon*, a plant-eater

**Group 2:** Influence of Soil and Climate on Preservation of Fossils
"Dinosaur Alley"
A land of swamps and ferns
The benefits of clay

**Group 3:** Animal Life
Bear, buffalo, deer, fish
Camel, rhinoceros, saber-toothed tiger, sloth

**Group 4:** Water, water everywhere
Potomac River origins
Rock Creek and its quarry

**Answers**
**Timeline A:** a. 6; b. 3; c. 1; d. 7; e. 4; f. 5; g. 2. Student Created
**Timeline B:**

- 100 million years ago: Washington is a jungle filled with huge ferns and ferocious dinosaurs.
- 66 million years ago: The dinosaurs, including capitalasaurus, died out.
- 1 million years ago: Sloths, camels and saber-tooth tigers are as common in the Washington area as minivans and SUVs are now.
- 8 million years ago: The Potomac River starts as a trickle.
- 12,000 years ago: The weather cools and trees that you see today, including oaks and maples start to sprout.
- 10,000 years ago: Bears, deer, buffalo and Native Americans roam the Washington area.
- 213 years ago: George Washington, Thomas Jefferson and Alexander Hamilton reach agreement to put the nation's capital on the banks of the Potomac River.

**True or False:** 1. False; 2. True; 3. True; 4. False; 5. True; 6. False; 7. False. Short Answer: Answers will vary.
**A Look at Dinosaur:** 1. Brontosaurus; 2. Brachiosaurus; 3. Tyrannosaurs; 4. Triceratops

### D.C. Digs

**Crossword Answers**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 F | 2 O | 3 S | S | 4 I | 5 L | ■ | 6 B | E | 7 D |
| 8 E | R | A | ■ | 9 N | O | 10 D | O | ■ | 11 I |
| 12 R | E | N | 13 T | S | ■ | 14 A | N | 15 O | N |
| N | ■ | 16 D | O | T | 17 E | ■ | 18 E | D | O |
| 19 S | 20 A | ■ | ■ | 21 I | R | 22 S | ■ | 23 O | S |
| ■ | 24 R | A | 25 I | N | ■ | 27 O | 28 K | R | A |
| 29 A | I | M | ■ | 30 C | 31 H | I | N | ■ | 32 U |
| 33 C | A | P | 34 I | T | O | L | ■ | 35 O | R |

## In the Post

➤ *http://www.washingtonpost.com/wp-dyn/education/kidspost/nie/A37317-2003Jun9.html*
**"Washington, B.C."**
Michael Farquhar reports on the D.C. scene millions of years ago.

➤ *http://www.washingtonpost.com/wp-dyn/education/kidspost/nie/A56152-2003Mar19.html*
**"The Past is Present"**
This full-length feature appeared in The Washington Post's Sunday Magazine in March 2003. Michael Farquhar examines the history of the neighborhood of the new convention center and City Museum of Washington, D.C.

➤ *http://www.washingtonpost.com/wp-dyn/education/kidspost/nie/A8781-2002Sep26.html*
**"Did Dinosaurs Ever Live in Maryland?"**
A KidsPost Now You Know Q and A, Sept. 27, 2002.

➤ *http://www.washingtonpost.com/wp-dyn/education/kidspost/nie/A99075-1998Apr16.html*
**" 'Them Dino Bones'"**
An April 16, 1998, Post editorial

➤ *http://www.washingtonpost.com/wp-dyn/education/kidspost/nie/A99074-1998Apr29.html*
**"Making No Bones About Their Goal: Students Lobby Council to Adopt Specimen as D.C.'s Official Dinosaur"**
Vanessa Williams reports on D.C. student efforts, April 29, 1998.

➤ *http://www.washingtonpost.com/wp-dyn/education/kidspost/nie/A99833-1991Aug29.html*
**"Digging Up the Dirt on Prehistory: Fossil-Laden Clay Offered for Study"**
Nancy Reckler reports local schools' involvement in paleontology project.

# Did Dinosaurs Ever Live in the Washington, D.C., Area?

Definitely, dino fans.

Big dinosaur fossils have been found in Maryland. One of the most spectacular was the 90-pound chunk of a dinosaur thigh found near Laurel in 1991. A father and his two kids, ages 10 and 7, had been looking for fossils in a quarry when they found the six-foot bone.

The 110-million-year-old bone came from an *Astrodon johnstoni*, Maryland's official state dinosaur. It's a massive mascot. Adults grew to 30 feet tall and 50 to 60 feet long, paleontologists believe.

A.J. (we're KidsPost, we can give him a nickname) roamed Maryland during the early Cretaceous period, between 140 million and 65 million years ago. He was a plant-eater who looked kind of like a brachiosaur, the type of dinosaur once known as Brontosaurus.

*Astrodon johnstoni* is just one of more than a dozen types of dinosaurs that lived in what is now called Maryland. There was *Dryptosaurus*, a toothy carnivore much like the famous *Tyrannosaurus rex*. There was the plant-eating *Priconodon* and the ostrich-like *Archaeornithomimus*. These and other dinosaurs thrived in the ancient Maryland climate: swampy and ferny and similiar to today's Louisiana.

Western states have a bigger reputation for dinosaur discoveries, and they deserve it. Fossils are much more plentiful and better preserved there.

Fewer fossils have been found in Maryland, not because there were no dinosaurs, but because conditions to preserve ancient remains weren't as good. In the wet, mild Northeast, the past is buried under season after season of plant growth and decay.

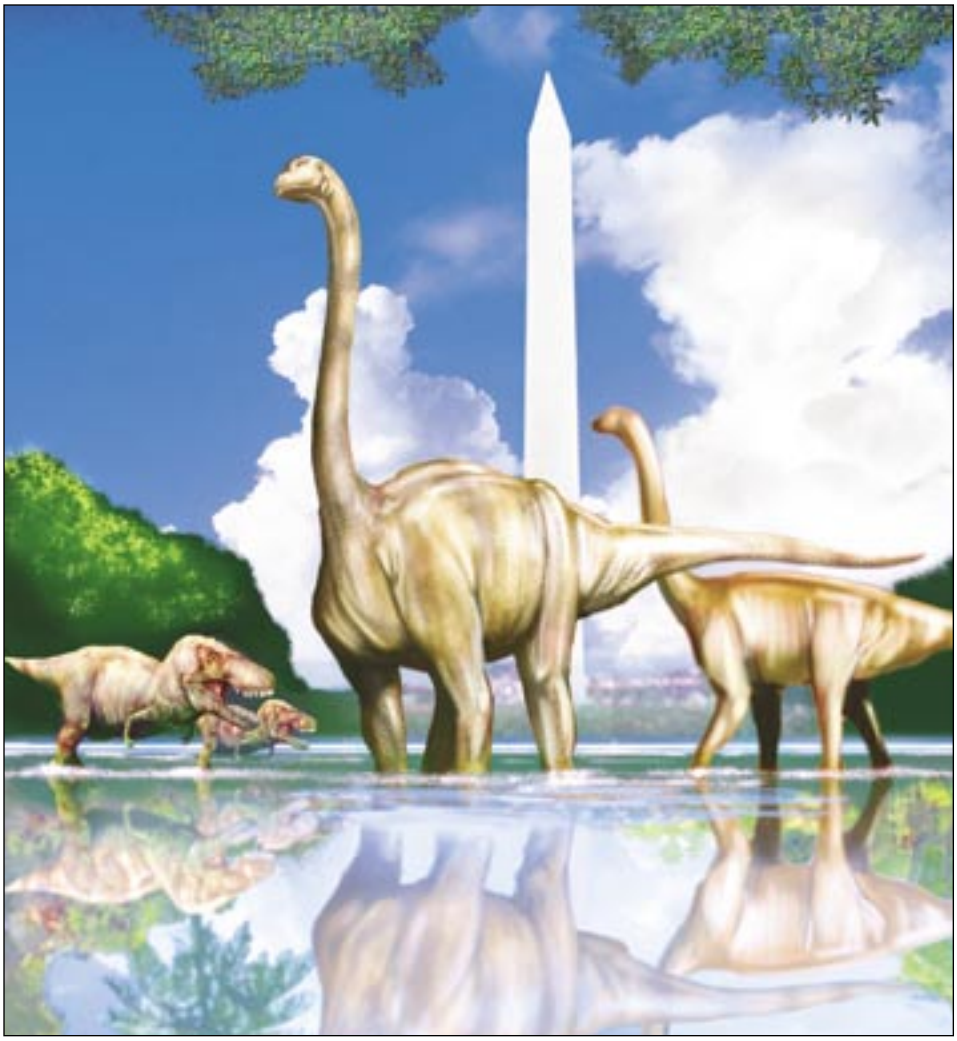

ILLUSTRATION BY KAREN CARR FOR THE WASHINGTON POST

**Dinosaurs roam the area around the present-day Mall in D.C. 100 million years ago.**

It took iron miners to unearth the first eastern dinosaur fossils, in the 19th century. Later, mysterious teeth and bones started turning up in ore and clay deposits in Prince George's and Anne Arundel counties.

For a time, the stretch of land along U.S. Route 1 was known as "Dinosaur Alley." Dinosaur fossils are still being found in a strip of gray clay there, called the Arundel formation.

Dinosaur bones have been found throughout the region, including the District and Virginia. About 100 years ago, bones were discovered by workers digging for a sewer pipe near First and F streets SE. Those bones belonged to a cousin of T-rex, renamed Capitalsaurus. (It's the District's official dinosaur.)

So, next time you're feeling oppressed by the landscape of parking lots, strip malls and cul de sacs, picture A.J. and his pals stomping through it.

**—Fern Shen**

**NAME** _____

# Washington, B.C.

**Timeline**

**A. Number the following statements, placing them in the correct time order. Number 1 should be the earliest event. Number 7 should be the most recent event.**

_____ a. Native Americans roam the Washington area.

_____ b. Sloths, camels and saber-tooth tigers live in Washington area.

_____ c. Washington is a jungle filled with huge ferns and ferocious dinosaurs.

_____ d. Washington, D.C., is established as the nation's capital.

_____ e. The Potomac River starts as a trickle.

_____ f. The weather cools and trees that you see today, including oaks and maples start to sprout.

_____ g. The dinosaurs, including Capitalsaurus, died out.

**B. Using the dates given in the article and the information above, create a timeline on your own paper. Illustrate it.**

**True or False**

Use the information in "Washington, B.C" and "Did Dinosaurs Ever Live in the Washington, D.C., area?" to respond to this section.

Write "True" in front of the statements that are accurate.

Write "False" in front of the statement that are not accurate.

_____ 1. The Appalachian Mountains were never higher than the Rocky Mountains.

_____ 2. Meat-eating and plant-eating dinosaurs lived in the D.C. area.

_____ 3. Some of the sand on the Atlantic shore was once part of the Appalachian Mountains.

_____ 4. Native Americans found the clay soil too difficult for planting crops.

_____ 5. Fish were once plentiful in the Potomac River.

_____ 6. Dinosaur bones were not found in Virginia.

_____ 7. Maryland's official dinosaur was a small, meat-eater.

**Short Answer**

Michael Farquhar described life in the past. During which of these times would you have liked to live in the D.C. area? Tell why you have selected this time period.

# Official Dinosaur Designation Act of 1998

## Bill 12-538

A BILL IN THE COUNCIL OF THE DISTRICT OF COLUMBIA

To Designate the Capitalsaurus as the official dinosaur of the District of Columbia.

BE IT ENACTED BY THE COUNCIL OF THE DISTRICT OF COLUMBIA, That this act may be cited as the "Official Dinosaur Designation Act of 1998."

**Sec. 2 Findings:**

(1) The dinosaur which was discovered, in January 1898 at First and F Streets S.E., in the District of Columbia, by workmen during a sewer connection project 100 years ago is the only known specimen of its kind in the world.

(2) The Capitalsaurus was a large meat eating reptile which may be an ancestor of the T. (tyrannosaurs) rex.

(3) About 110 million years ago, the Capitalsaurus lived in the District of Columbia with many other dinosaurs including planteaters.

(4) The District of Columbia during the Capitalsaurus lifetime resembled the bayou country of southern Louisiana.

(5) The Capitalsaurus fossil discovered in 1989 is now at the Smithsonian Museum of Natural History in the type room.

(6) The Captialsaurus is unique to the District of Columbia because its fossil remains have not been discovered anywhere else in the world.

(7) The vertebra of the dinosaur was given to the Smithsonian Institution as a gift by J.K. Murphy on January 28, 1898 and recorded as accession number 33153 and specimen number NMNH 3904.

(8) District of Columbia Public Schools' students have been studying the Capitalsaurus and many other dinosaurs from this area for years.

(9) The students have also helped to dig up dinosaur fossils which are now part of the Smithsonian's permanent collection.

**Sec. 3.**

The Capitalsaurus shall be the official Dinosaur of the District of Columbia.

**Sec. 4. Fiscal impact.**

The act shall have no fiscal impact.

**Sec. 5.**

This act shall take effect immediately following approval by the Mayor (or in the event of veto by the Mayor, action by the Council to override the veto), approval by the Financial Responsibility and Management Assistance Authority as provided in section 203(a) of the District Financial Responsibility and Management Assistance Act of 1995, approved April 17, 1995 (109 Stat. 116; D.C. Code ?392.3(a), 30-day period of Congressional review as provided in section 602 (c)(1) of the District of Columbia Home Rule Act, approved December 24, 1973 (97 Stat. 813; D.C. Code ?33(c)(1), and publication in the District of Columbia Register.

# Capitalsaurus and Astrodon

The following information is an excerpt from "An Alphabetical Listing Of Our Dinosaur TYPE Specimens At The National Museum Of Natural History Smithsonian Institution" by M.K. Brett-Surman. The complete online listing *(http://www.nmnh.si.edu/paleo/dino/dinotypes.htm)* is provided by the Department of Paleobiology of the Smithsonian National Museum of Natural History.

A TYPE specimen is the original specimen used to name a new species. It is the "name bearer" specimen. A designation of "nomen dubium" means that the specimen is a *dubious name*.

**"*Capitalsaurus*", see "*Creosaurus*"**

***Creosaurus potens* Lull 1911, USNM 3049**

This species of theropod has the unique distinction of being discovered underneath the nation's capital! It was found in downtown Washington, D.C., by J.K. Murphy in the late 1800's during an excavation for a sewer line. It is presumed to be from the Arundel Formation (Early Cretaceous Period). The type material consists only of the centrum (base) part of a vertebra of what is now considered to be either an indeterminate theropod, or some form of saurischian dinosaur. The original publication was by R.S. Lull in the Lower Cretaceous volume of the Maryland Geological Survey Stratigraphic Series.

The reader is also referred to the monograph by C.W. Gilmore, published in 1920 as part of the Bulletins of the U.S. National Museum.

Unfortunately this specimen was used to try and name a new genus, "*Capitalsaurus*", in honor of the nation's capital. This is not scientifically justified and the name "Capitalsaurus" has no validity.

***Pleurocoelus altus* Marsh 1888, USNM 4971**

This species of brachiosaurid sauropod has appeared in the literature mostly under the name of "Astrodon". The type material is from Prince Georges County, Maryland and was collected on November 21, 1887 by Hatcher and Linthicum. It is from the Arundel Formation (Early Cretaceous Period, Albian stage) and consists of a partial tibia and fibula. The original description was by Marsh in the American Journal of Science, volume 35, page 92, in 1888, where he referred this species to the previously named genus "*Astrodon*". (See also Gilmore, 1921.)

The original TYPE of "*Astrodon*" consists of three teeth from the Arundel Formation that are housed in the Yale Peabody Museum collections, in New Haven, Connecticut. It has become traditional to refer any East Coast sauropods from the Lower Cretaceous to this genus, which is scientifically unjustified. "*Astrodon*" is considered to be a *nomen dubium*.

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# Word Study ... A Look at Dinosaur

Do you fear dinosaurs as you picture the inhabitants of Jurassic Park? Or do you dote on dinosaurs? Do you believe they are fascinating, imaginary creatures or find them as evidence of a powerful past?

According to biology books, dinosaurs are not phantoms. They existed, but are no longer living; they have been extinct an estimated 65 million years. Some of these giant reptiles ate meat and some ate plants. Dinosaurs are classified in the orders Saurischia and Ornithischia. Existing during the Mesozoic era, most dinosaurs lived on land, but a few lived in water.

In 1842, British anatomist Richard Owen invented a word for use in a technical paper, "Report on British fossil reptiles. Part II." He combined two Greek words: *deinos* and *sauros* to create the new term "dinosaur." Some dictionaries define *deinos* as "monstrous." The National Museum of Natural History says that Owen was using the superlative meaning of *deinos* that is "fearfully great, as in awe-inspiring." *Sauros* means "lizard." The Smithsonian museum adds that Owen "knew they were NOT lizards, but thought that they may have been derived from them." Remember this was 1842.

So, if we look at dinosaurs as Richard Owen did, they are not terrible lizards. Dinosaurs are creatures that inspire awe.

In 1824, William Buckland was the first person to publish a description of a reptile that he had named *Megalosaurus*. He had collected fossils from a quarry near Oxford in England. The fragments revealed that the lizard had to be as large as an elephant. So it was *mega* (great, large), a *Megalosaurus* or Great Lizard.

As more dinosaurs were discovered, different characteristics emerged. The specimen needed names to distinguish them. For example, a double row of upright bony plates ran along the back of an herbivorous dinosaur. It had long legs, a short neck and a small head. What might be the distinguishing trait? It almost looked like it carried a roof over its body, so it was given the name Stegosaur.

Can you name four more dinosaurs?

If you were a dinosaur, what would your name be?

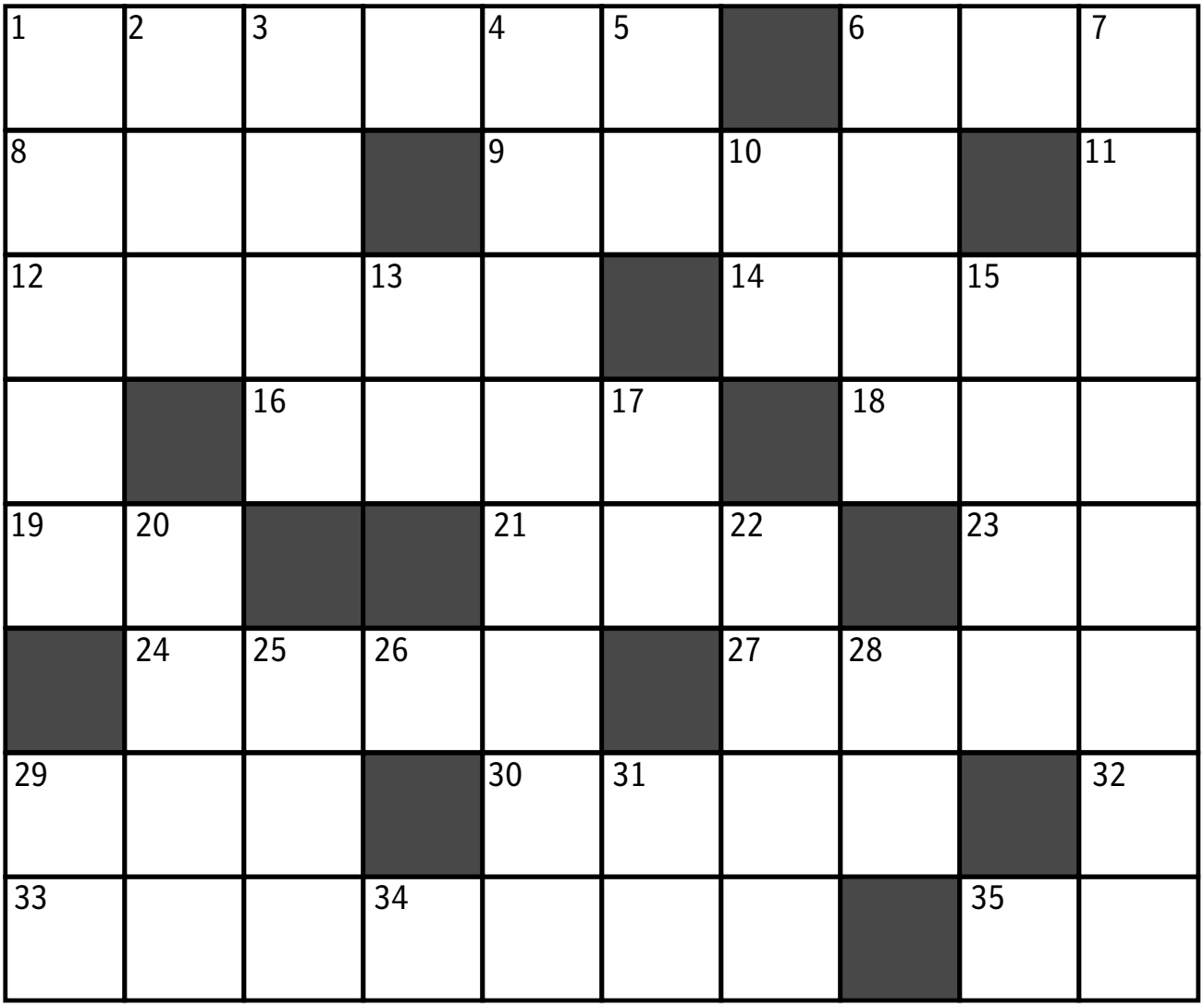
| Greek word | Meaning | Dinosaur's Name |
|---|---|---|
| *Stegos* | Roof | Stegosaur |
| *Brontê* | Thunder | _____ |
| *Brachi* | Arm | _____ |
| *Turannos* | Tyrant | _____ |
| *Tri + keras + ops* | three + horn + eye | _____ |

People have examined fossils and imagined what dinosaurs might have looked like. The first full-scale models of dinosaurs, created by sculptor Waterhouse Hawkins, were displayed at London's Crystal Place Exhibition in 1851. As more fossils were discovered and technology improved, more could be known about dinosaurs. You can go online to view many interesting exhibits, even see electron scans of dinosaur eggs, or you can get even closer to dinosaur fossils and reconstructions by visiting the National Museum of Natural History on the Mall.

**NAME** _____

# D.C. Digs

Many of the words in this crossword puzzle are associated with dinosaurs and D.C



**ACROSS**

1. A remnant of a past geological age
6. The land on which Washington, D.C., was built was once a river_ _ _.
8. A major division of geological time
9. Means "knobby," as in *Nodosaurus*. A species of *nodosaurid ankylosaur* was found in Prince George's County in 1887.
11. First person singular pronoun
12. The aggressive animal _____ or tears apart its victim to establish territory. In modern times: He does not own his apartment. He ____ it.
14. Anonymous (abbrev.)
16. Express excessive love or fondness
18. Ancient name for Tokyo
19. South America (abbrev.)
21. Internal Revenue Service (abbrev.)
23. Old Style (abbrev.)
24. Water falling in drops
27. Green "slimy" pod that is eaten
29. Ability to hit a target
30. Lower part of the face, below the lower lip
32. Twenty-first letter of the alphabet
33. The building in which the U.S. Congress meets
35. Particle used to express an alternative

**DOWN**

1. Flowerless, seedless plants with fronds
2. A mineral deposit
3. Particle that is smaller than gravel, coarser than silt
4. A natural impulse or aptitude
5. Expression of wonder or surprise, as in "__ and behold that lizard!"
6. Hard part of the skeleton of a vertebrate
7. Extinct carnivorous or herbivorous reptile
10. District Attorney (abbrev.)
13. Most workers take the Metro or drive _ _ work.
15. Smell. Think of a swamp on a hot July day.
17. Emergency Room (abbrev.)
20. An elaborate melody for a single voice
22. Land
25. Ampere (abbrev.)
26. Ninth letter of the alphabet
28. Kronen (abbrev.)
29. Alternating current (abbrev.)
31. Expression to attract attention, as in "land _ _"
34. _, me, and myself

# Academic Content Standards (The main lesson addresses these academic content standards.)

*This lesson addresses academic content standards of Maryland, Virginia and the District of Columbia. Among those that apply are:*

## Maryland

*Science*

Skills & Processes: Students will demonstrate the thinking and acting inherent in the practice of science. Use the knowledge of science and available scientific equipment to devise a plan to solve a practical problem. Grade 7: Apply concepts and processes of science to take and defend a position relative to an issue.

*Reading*

Students examine, construct and extend the meaning of a variety of self-selected and assigned text (traditional and electronic) by applying a range of reading strategies and analytic techniques. Students

- distinguish relevant from irrelevant information contained within text;
- distinguish among facts, and opinions in text;
- distinguish whether information can be useful or not.

A complete list of State Content Standards of Maryland can be found at http://www.mdk12.org/mspp/standards/.

## Virginia

*Science*

Grade Five:The fifth-grade standards emphasize the importance of selecting appropriate instruments for measuring and recording observations. The organization, analysis, and application of data continue to be an important focus of classroom inquiry. Science skills from preceding grades, including questioning, using and validating evidence, and systematic experimentation, are reinforced at this level.

Grade Six: The sixth-grade standards continue to focus on student growth in understanding the nature of science. This scientific view defines the idea that explanations of nature are developed and tested using observation, experimentation, models, evidence and systematic processes. The nature of science includes the concepts that scientific explanations are based on logical thinking; are subject to rules of evidence; are consistent with observational, inferential, and experimental evidence; are open to rational critique; and are subject to refinement and change with the addition of new scientific evidence. The nature of science includes the concept that science can provide explanations about nature, can predict potential consequences of actions, but cannot be used to answer all questions.

*Reading*

Grade Six, 6.6:The student will compare and contrast information about one topic contained in different selections.

A complete list of Standards of Learning of Virginia can be found on the Web at http://www.pen.k12.va.us/.

## Washington, D.C.

*Science*

Life Science, Content Standard 2: Observe, investigate, describe and classify living things; explain life cycles, diversity, adaptations, structure and function of cells and systems reproduction, heredity, interdependence, behavior, flow of energy and matter and changes over time. Grade 4: The student classifies living things to know a great variety of kinds of living things can sorted into groups in many ways using various features to decide which things belong to which group.

*Reading*

Language for Research and Inquiry, Content Standard 3: Students use language and symbol systems (e.g., timelines, maps, graphs and charts) to define problems and organize information. The student

- generates questions and makes connections about issues, texts, or topics of interest;
- distinguishes between primary and secondary sources;
- identifies strategies for managing information (e.g., summarizing, checking for bias).

A complete list of Standards for Teaching and Learning of the District of Columbia Public Schools can be found at http://www.k12.dc.us.