

 TEXT STUDY

# Boy, Were We Wrong about Dinosaurs!

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**MAP** Grade 3 • Unit 6

**UNIT** Fantastic Adventures with Dragons, Gods, and Giants

**TYPE** Informational Text (Lexile 900L)

OVERVIEW • TEXT-DEPENDENT QUESTIONS • ASSESSMENT

## OVERVIEW

### RATIONALE

This well-illustrated informational text illuminates how scientific knowledge is constantly evolving. Although some teachers may choose to use this book to compare dragons (featured in literature) with dinosaurs (studied in science), we chose to look closely at the way the author links ideas in an informational text and crafts a structure that helps students deeply understand the key ideas and details found in the text.

### SUGGESTIONS FOR USE

Although this book has a Lexile level of 900, it is a CCSS exemplar informational text for grades 2 and 3. The relatively high Lexile level is likely due to the vocabulary related to dinosaurs—however, this vocabulary may already be familiar to many students who have previously studied dinosaurs. Some students may need to have the teacher read this text aloud during the first read, but most students will likely be able to read the book independently. Rereading the text draws out the repeated phrases used throughout the book, highlighting how the author’s craft and structure underscore how new scientific understanding is different from old.

### COMMON CORE STATE STANDARDS ALIGNMENT

#### (a) Focus Standards

*Students will work towards mastery of the following standards through the completion of the performance assessment task:*

**RL.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

**RI.3.8** Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).

**W.3.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

**(b) Additional Standards**

- **RI.3.10**
- **RF.3.4**

**VOCABULARY**

*Some words from this book may be unfamiliar to students or may be used in a different way than students have seen previously. Possible words for study include:*

- enormous
- ancient
- waddle
- clumsily
- tendons
- bask
- comet
- asteroid
- acid rain
- tertiary
- cretaceous

## TEXT-DEPENDENT QUESTIONS

- 1 According to the illustration on pages 1 and 2, who was digging for bones? What did they find? What tools did they use?
  - Chinese archaeologists were digging for bones.
  - The text says, “long, long ago... giant bones were found in China.”
  - The tools shown in this picture are a pickaxe, a shovel, a broom, and a wheelbarrow.
  
- 2 According to page 3, why did the ancient Chinese determine the huge bones belonged to dragons?
  - The “wise men” decided they were dragons because only “magic dragons” could be so large.
  
- 3 What does the author mean on page 4, when she says, “...our own past guesses about dinosaurs were just as wrong as those of ancient China”? How does the illustration support the text on page 4?
  - Because of the limited clues and fossil bones related to dinosaurs, we may have believed as many “wrong guesses” in modern times as the ancient Chinese believed long ago.
  - The illustration shows some of the clues that we have today to study dinosaurs: footprints, a jaw with teeth, eggs, and some bones.
  - The illustration shows a sampling of how little information scientists have upon which to base conclusions about dinosaurs.
  
- 4 Using evidence from pages 5 and 6, explain how the scientists’ thinking changed about the Iguanodon.
  - When scientists found a bone shaped like a rhino’s horn near the first Iguanodon’s bones, they thought it was a spike on its nose.
  - Later, scientists found a full set of Iguanodon bones. They realized that the pointed bones were part of the hand, not the nose.
  
- 5 How did the author and illustrator work together to compare the old assumptions to newer thinking about the legs of a dinosaur?
  - On page 7, the author wrote about the old thinking and the illustrator created a drawing with only black and white.
    - The illustration shows the dinosaur lying flat on the ground with its legs straight out to the side. The text explains that both the elbows and knees pointed out to the side like a lizard.
    - The illustration shows the dinosaur moving clumsily, and the author writes about how it “could only waddle clumsily on all fours.”
  - On page 8, the author wrote about the newer thinking and the illustrator drew a full color drawing of it. The author wrote how the legs were “straight under them like a horse.” The illustrator shows how the legs came down so the animal could run “as fast and graceful as a deer.”
  
- 6 How has scientific thinking about the tail of the dinosaur changed?
  - According to page 9, scientists once believed that dinosaurs had tails that they dragged around behind them. This belief was based on the “few fossils of tail drags.”
  - According to page 10, these conclusions changed when footprints were found with no tail drag marks following the prints.

- The scientists have found clues indicating that some dinosaurs' tailbones "had stiff tendons inside" that were strong enough to hold the tails out straight.
- 7 How is the layout of pages 9 and 10 similar to the layout of pages 7 and 8? How is the content similar on both sets of pages?
- The illustration on the first of the pair of pages is in black and white, showing an old way of thinking. The second illustration of the pair is in color.
  - The content of the pages first explains the old thinking about a dinosaur body part and then describes the newer thinking about the body part.
- 8 What is an important difference between a lizard and a dinosaur? How did this difference challenge old assumptions about dinosaurs?
- Lizards are cold-blooded, and depend on the sun to warm them up. Their bones have few blood vessels inside and new bone grows slowly year after year, adding rings.
  - Dinosaur bones contain lots of blood vessels and bone seems to grow around every vessel.
  - Dinosaurs may be more like birds than lizards, with internal warmth and energy, as birds have. Now scientists think dinosaurs may be classified as "neither cold-blooded nor warm-blooded, but something in between."
- 9 What is the main idea of pages 13 – 16? What details support this main idea?
- The main idea of these pages is the comparison between the old and new thinking of skin coverings for dinosaurs.
  - Key details include:
    - Scientists used to think dinosaurs were scaly, but now they think they may have had feathers.
    - Small dinosaurs are thought to have had a range of feather types, from chick-like feathers to longer, rooster-like feathers.
    - Large dinosaurs were probably more similar to elephants, not needing fur or feathers.
- 10 Within the first paragraph on page 17, what are the key words showing the old way of thinking and the new way of thinking about dinosaurs' colors and patterns?
- The opening of the paragraph reads, "Scientists used to think that large dinosaurs were gray..."
  - In the third sentence, the author uses the word Now to signal a change in thinking as she wrote, "Now scientists think that dinosaurs had colorful patterns..."
  - Note the importance of students seeing these signal words in the remaining pages of the text. The author uses repetition to make this content accessible to third graders.
- 11 According to pages 19 – 22, how has thinking changed regarding how mother dinosaurs cared for their young?
- Scientists thought dinosaurs laid their eggs and left them.
  - Now, scientists believe the dinosaurs cared for their young in nests, maintained nests in safe places, and protected their young dinosaurs by walking with them in the middle of the herd.

- 12 According to pages 23 and 24, what is the most recent thinking about the end of the dinosaur age? How do the author and illustrator support this thinking with evidence?
- **Scientists think a comet or asteroid may have hit the earth, causing a huge dust cloud to poison the rain and block the sunshine for years. Plant eaters would have died without new plants available and meat eaters would have died out for lack of food.**
  - **This idea is based on evidence in “a fossil layer of dust that is probably from outer space.” The illustrator shows a layer of ash between the cretaceous and tertiary layers of rock.**
- 13 How did the author use old Chinese ideas to link the beginning of the text to the end of the text?
- **At the beginning of the text on page 3, the author explained that the Chinese believed that dinosaurs, or dragons, could still be alive today.**
  - **On page 26, the author wrote that if the dinosaur were still living, in the form of a bird, then in a sense, the old Chinese idea might be right: dinosaurs still live today.**
  - **At the beginning of the text, on page 3, the Chinese called the dinosaurs “dragons.”**
  - **At the end of the text on page 28, the author wrote that our current ideas about dinosaurs might later be thought to be “just as silly as the magic dragons of long-ago China.”**
- 14 What phrase did the author repeat throughout the book? How does this repetition emphasize the main idea of this text?
- **The title of the book is Boy, Were We Wrong about Dinosaurs! The author repeated part or all of this sentence on pages 3, 6, 19, and 28.**
  - **The main idea of this text is how thinking about dinosaurs has changed because of new archaeological findings.**
- 15 How does the “Dinosaur Discovery TimeLine” on page 29 support the information in this book?
- **The timeline shows the progression of changes in thinking as related to dinosaurs. For example, the 1842 entry tells how Richard Owen coined the term “Dinosauria,” meaning “great reptile.” The accuracy of this name was challenged in 1964 when a scientist questioned the cold-blooded nature of the dinosaur.**
  - **Each step in the timeline supports either the old thinking or the new thinking about dinosaurs.**
- 16 How does the author add humor to the list of resources on page 29?
- **The author uses the word “dig” in one title: “Where Can You Dig For More Information”**
  - **Throughout this book, the word “dig” would be normally used as a literal digging in the ground to find fossils. The author is using the word “dig” figuratively, as in the act of hunting for information in this text and others like it.**

## PERFORMANCE ASSESSMENT

### **PART ONE**

Lead students in a discussion in which they review instances where scientists learned new information and changed their conclusions about dinosaurs as a result. Create a list of the ways the author signaled she was going to reveal a newer, different way of thinking.

### **PART TWO**

Give students the following writing task: Write a well-developed, informative/explanatory paragraph explaining how scientific thinking about dinosaurs has changed throughout history. Include two to three discoveries explained in the text that caused scientists to change their ideas. Be sure to use language that signals old thinking and revised thinking, as modeled in the text, such as “We used to think...,” “Now...,” and/or “Boy, were we wrong!”

Your response should:

- Introduce the topic of how scientists have changed their thinking about dinosaurs.
- Include two or three discoveries explained in the text, causing these shifts in understanding how dinosaurs lived.
- Use language that signals the changes between old and new thinking.
- Include a conclusion of your summary.
- Include proper punctuation, capitalization, and correct spelling in the final draft.

## TEXT FLUENCY

Read the following text for the students, demonstrating the elements of fluent reading: accuracy, prosody, and appropriate rate. Fluent reading of informational text may be less dramatic but serves to reinforce the words and phrases that signal the changes in thinking (e.g., “we used to think” or “boy, were we wrong!”).

### **PASSAGE 1**

(118 words)

Long, long ago, before people knew anything about dinosaurs, giant bones were found in China. Wise men who saw the bones tried to guess what sort of enormous animal they could have come from.

After they studied the fossil bones, the ancient Chinese decided that they came from dragons. They thought these dragons must have been magic dragons to be so large. And they believed that dragons could still be alive.

Boy, were they wrong!

No one knows exactly what dinosaurs looked like. All that is left of them are fossil bones and a few other clues. Now we think that many of our own past guesses about dinosaurs were just as wrong as those of ancient China.

(Schindler, pages 2 – 4)

### **PASSAGE TWO**

(104 words)

We used to think that dinosaur mothers acted like lizard mothers. Boy, were we wrong! Lizards just lay their eggs on the ground, then leave. They never see their own babies.

Now we have found fossil dinosaur eggs in fossil nests. Some of the nests hold newly hatched babies. Other nests are packed tightly with older baby dinosaurs. These youngsters have scratches on their teeth from eating tough plants. Did their mothers bring food back to the nest? Or did the young go out to feed, then come back home to sleep? We can only guess, but these are things that lizards never do.

(Schindler, pages 19 and 20)