# MAD SCIENTIST ACADEMY

INCLUDES COMMON CORE STATE STANDARDS CORRELATIONS AND STEM CONNECTIONS

## THE DINOSAUR DISASTER

By MATTHEW McELLIGOTT

## A Classroom Discussion & Activity Guide

**ABOUT THE BOOK:**

Enroll in Dr. Cosmic's class of clever monsters at the Mad Scientist Academy as they use the scientific method to solve the greatest challenges in science, in this perfect blend of fun, adventure, and exploration.

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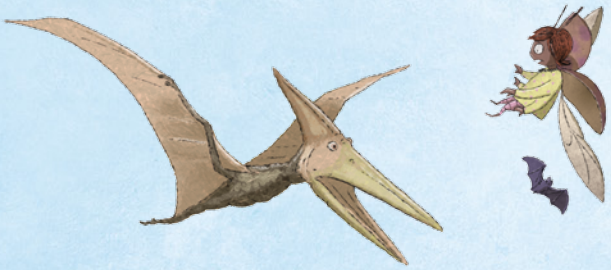
# A NOTE TO TEACHERS:

## THE DINOSAUR DISASTER

combines a fictional story with information about dinosaurs, which is important for a teacher to convey when reading the book aloud to a class. For example, the characters include a vampire and a werewolf, which students will recognize as fictional. At the same time, many children will identify the dinosaur names and facts as scientifically correct. Another part of the reading-aloud process for this book will be to discuss the role of sidebars and charts in supplying more facts.

### Tips for a "Think-Aloud Read-Aloud"

Reading aloud gives teachers a chance to model for students the thought process of an experienced reader. While reading, teachers can ask questions about the text, discuss and define unfamiliar words, and note how the illustrations add information. A related approach is to pause and invite students to ask or answer questions, including what they think unfamiliar words mean in the context of the narrative and pictures.



### STEM and Common Core Connections

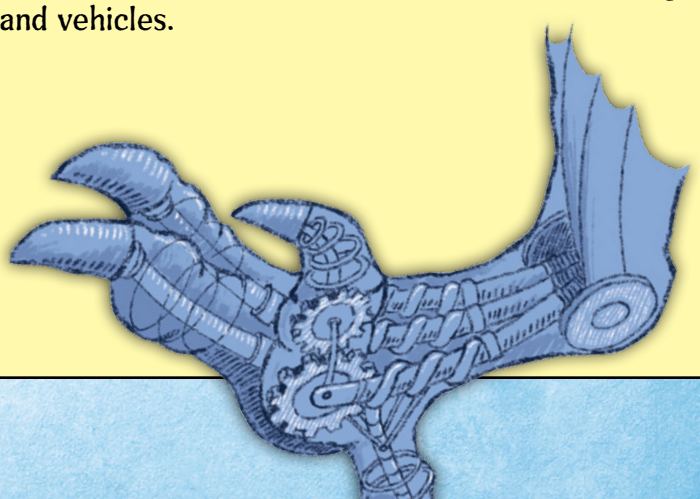
Education now strives to integrate science, technology, engineering, and math (STEM) across the curriculum. Series like Mad Scientist Academy make this easy to do with its combination of child-oriented story, entertaining pictures, and high-appeal science. It conveys main ideas about the history and variety of dinosaurs using key details that students will identify through close reading. Charts throughout the book show the use of graphic organizers to convey facts. The charts also display the compare/contrast principle emphasized by the Common Core State Standards. The characters in the story demonstrate problem solving, an important component in science and engineering. This guide facilitates using the book for the overlapping goals of STEM and Common Core instruction through discussion questions and activities.

### The Engineering Design Process

This book offers an appealing way to introduce the idea of engineering and its goals to your class. Explain that engineers follow certain steps when they are looking for a solution to a problem. Their process is often aimed at designing and building a machine or other product. In *The Dinosaur Disaster*, Dr. Cosmic has been designing mechanical dinosaurs for an exhibit. Talk with students about the standard engineering design process, which generally follows these steps:

- Define the problem
- Do research
- Brainstorm possible solutions
- Select a promising solution
- Build a prototype
- Test and then redesign or modify as needed

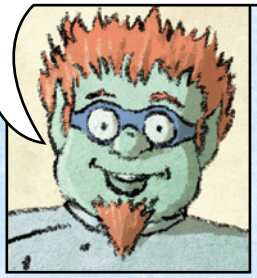
As a class, look at the book's endpapers, which show two of his designs. Discuss his sketches and the role of labels and measurements. How well do his mechanical dinosaurs work in the story? How might he need to redesign or modify them? Have a class discussion about engineering projects that children encounter in their lives such as bridges and vehicles.



# DISCUSSION QUESTIONS

**Correlates to Common Core Anchor Standards for Reading Literature: K-3.1, 1-3.2, K-3.3, K-3.4, K-3.7**

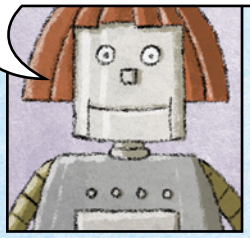
**1.** Before reading the story, have students talk about the series title (Mad Scientist Academy) and the book title *(The Dinosaur Disaster)*. Discuss the word *academy* and what it might mean. Do the illustrations on the cover or the back of the book give any clues? What is a *disaster*, and how might a dinosaur cause one? Ask students if they've heard the expression *mad scientist*. If so, where did they hear it, and what do they think it means? Which character on the cover might be a mad scientist?



**2.** What else does the cover illustration convey about the book? Have students predict the main subject matter and see if they can identify characters. Discuss whether the tone of the book suggested by the cover illustration is serious, humorous, sad, exciting, or something else. Include the back cover in the discussion. In viewing the cover, have students point out the name of the author, who is also the illustrator of the book.

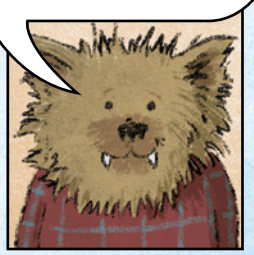
**3.** Write down the predictions from the previous two questions on chart paper. After reading the book aloud, return to the predictions and have the class discuss which ones came closest to the book's content.

**4.** After reading the book aloud the first time, go back through it with the class and make a list of unfamiliar words. Discuss words that are explicitly defined, such as *paleontologist* and *fossil*. For words that aren't defined, like *holographic* and *eruptions*, have students contribute what they know about the words. Then read them again in context, making sure students can see the pictures for clues, and discuss whether that adds more information.



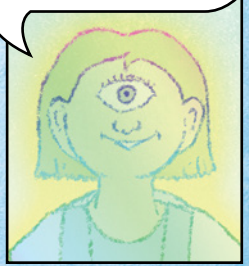
**5.** Have the class name and describe each character in the book. Talk about some of the unusual names, such as Dr. Tibia. Discuss the strengths and abilities of students in the story and how those abilities help the group.

**6.** Dr. Cosmic has planted clues for his new academy students to find and figure out. As a group, list the three clues and their answers. Brainstorm similar questions to ask about dinosaurs.



**7.** Many scientists work together in labs and write papers together. How does *The Dinosaur Disaster* show the characters working together? Give examples of how the characters solve the clues together and what each one contributes. What other problems do they encounter, and how do they solve them?

**8.** What aspects of the academy are similar to your school? What aspects are different? Describe the disasters and dangers that the students encounter at their new school.



**9.** Have students divide into partners or small groups, assigning each of them one double-page spread from the book. They should study the illustrations carefully and write down, or be able to report, what the illustrations add to the story in terms of information, emotion, character development, and so on.

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# CLASSROOM ACTIVITIES

Correlates to Common Core Anchor Standards for Writing: K-3.2, K-3.7; Speaking & Listening: K-3.1; K-3.2; K-3.5.

## 1. Dig into Dinosaur Facts

Near the back of the book, Dr. Tibia lists thirteen dinosaurs for a museum exhibit. Have each student choose one of these or another dinosaur of interest and conduct research on them, using print and Internet sources. With the information they find, they should create a diagram like the one in the book about *Tyrannosaurus rex*, which includes a drawing and several boxes of information linked to the drawing. Have students make a presentation to small groups or the whole class about their dinosaur.

## 2. Welcome to the Dinosaur Museum

After students have researched a dinosaur, have the class put together a museum exhibit. First have them discuss how materials are displayed in museum exhibits, visiting a museum to get ideas or looking at online museum displays. Decide what to exhibit, such as posters, collages, or dioramas about the dinosaurs. Some students may want to model their dinosaur in clay and exhibit it. Discuss how to arrange the classroom for the exhibit: by time period, alphabetically by dinosaur, or another order. Advertise the museum to the rest of the school and invite other classes to visit.

## 3. Terrific Timeline

Talk as a class about what timelines are and how they help organize information. Using a long sheet of butcher paper rolled out on the floor, have the class create a timeline of dinosaurs, divided into the different periods of the Mesozoic Era. Students should fit the dinosaur they researched into the timeline with its name, a drawing, and one piece of key information about that dinosaur. Display the timeline in a school hallway.

## 4. Fossil Fun

Many fossils, such as dinosaur footprints, are impressions left in stone. Have students make a fossil-like impression by modeling clay into a flat pancake shape. Provide an assortment of objects to press into the clay, such as coins, shells, or even small, hard toy dinosaurs. Students should carefully remove the object, leaving an impression in the clay. To take a cast of the impression, have students fill in the impression with white glue. Once dry and peeled off the clay, the glue will have the shape of the original object. For more detailed instructions, consult this website: **uky.edu/KGS/education/white_glue.htm.**

## 5. Dinosaur Puzzle Scavenger Hunt

Find pictures of different dinosaurs on the Internet and print them out on heavy paper. Cut each picture into several parts and hide them throughout the classroom. Have students search for the picture parts. Once they've found all the parts, have them work as a group to piece them together. Then have them identify the type of dinosaur. Have a discussion about how paleontologists find and assemble fossilized dinosaur parts. (Find information about paleontology at **amnh.org/explore/ology/paleontology.**)

## 6. Whose Footprint Is Bigger?

Using large sheets of paper, have students trace one of their feet and measure their footprint from the base of the heel to the top of the longest toe. Next to their footprint, have them measure out three feet, the length of a large sauropod footprint. Have them figure out how much longer the sauropod footprint is than theirs. They can then do the same thing with width, based on a sauropod footprint width of 18 inches.

# DINOSAURS SIDE BY SIDE

## INSTRUCTIONS:

After each student has researched a dinosaur, have them work in pairs to fill out the compare/contrast chart with a column for each dinosaur and a row for each topic. One row asks if the dinosaur is a carnivore or herbivore. Another row asks for the time period when each dinosaur lived. Have students add more comparison topics and fill in the whole chart.

*Educators: Reproduce this sheet for your classroom.*

| Dinosaur 1 | COMPARISON | Dinosaur 2 |
|---|---|---|
| | Carnivore or herbivore | |
| | Triassic, Jurassic, or Cretaceous Period | |
| | Size | |
| | How it moved | |
| | Other comparison | |
| | Other comparison | |
| | Other comparison | |



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# NAME THAT DINOSAUR

**YOUR NAME:**_____

Scientists have long used Greek and Latin words to name new discoveries, including dinosaurs. For example, the dinosaur name *Plateosaurus* comes from *plateo*, which means "flat," and *sauro*, which means "lizard."

## INSTRUCTIONS:

Have students write down the names of some of the dinosaurs in the book. Use the following website to learn what the syllables of the name mean, and fill out the attached graphic organizer. Post the results on a Dinosaur Word Wall, where students can compare the names and their Greek and Latin roots: enchantedlearning.com/subjects/dinosaurs/allabout/Nameroots.shtml.

*Educators: Reproduce this sheet for your classroom.*

**DINOSAUR NAME:**

**Latin/Greek Part of Word** → **English Translation**

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**Latin/Greek Part of Word** → **English Translation**

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**ENGLISH TRANSLATION OF DINOSAUR NAME:**



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# MAD SCIENTIST HANDBOOKS

**YOUR NAME:** _____

The first dinosaurs appeared around 225 million years ago in a time known as the Mesozoic Era. As we learned in the Mad Scientist handbooks, this era is divided into three periods: the Triassic, Jurassic, and Cretaceous. Using the Internet resources on the next page, what can you find out about the three dinosaurs below? What other information can you gather from the Mad Scientist Academy Dinosaur Fact Sheet?

**Educators: Reproduce this sheet for your classroom.**

## Plateosaurus

Likely lived in large herds, since fossils of many plateosaurs have been found together.

Period:

Diet:

Size:

Walks on how many feet:

## Stegosaurus

A plant-eater, it had spikes on its tail that it probably used for defense.

Period:

Diet:

Size:

Walks on how many feet:

## Tyrannosaurus rex

Its jaw was 4 feet long (1.2 meters). It is believed to have had the most powerful bite of any land animal ever.

Period:

Diet:

Size:

Walks on how many feet:



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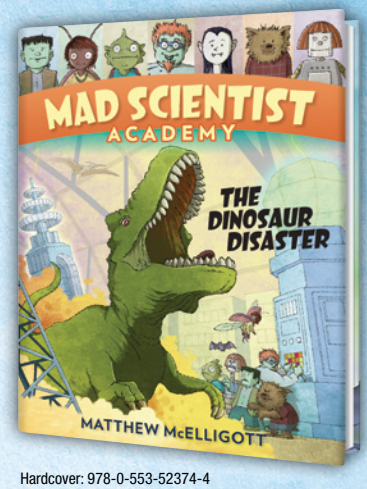
# ABOUT THIS AUTHOR

MATTHEW McELLIGOTT is the author of many books for children, including *Even Monsters Need Haircuts, Even Aliens Need Snacks,* and the Benjamin Franklinstein series. He has the brain of an *Apatosaurus* and the dashing good looks of a *Pachycephalosaurus.* In spite of this, a beautiful woman named Christy married him and now helps him with all his books. You can visit him at matthewmcelligott.com.

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## INTERNET RESOURCES

Mad Scientist Academy Books—More dinosaur facts and activities: madscientistacademybooks.com

DinoDictionary—Lots of dinosaur facts: dinodictionary.com

PBS Learning Media—Fossil slideshow: pbslearningmedia.org/asset/ess05_int_fossiltype/

Science Buddies—Information on the scientific method and the engineering design process: sciencebuddies.org/science-fair-projects/project_guide_index.shtml

American Museum of Natural History Science Website for Kids—Videos and more about paleontology, aimed at children: amnh.org/explore/ology/paleontology

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This guide was prepared by Kathleen Odean, chair of the 2002 Newbery Award Committee and a youth librarian for seventeen years. She is the author of *Great Books for Girls*, *Great Books for Boys*, and *Great Books About Things Kids Love* (all published by Ballantine). She gives workshops on new books and the Common Core State Standards.



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