EDUCATORS' GUIDE

Grades: K–3
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ABOUT THE BOOK

Welcome back to Mad Scientist Academy! In the second book of the series, Dr. Cosmic's class of clever monsters must face down blizzards, thunderstorms, floods, and tornadoes in this perfect blend of adventure and exploration.

Dr. Cosmic introduces his class to his new CHAOS machine—an invention that controls the weather on campus! The students learn all there is to know about the atmosphere, condensation, and precipitation from the great meteorologist Dr. Nimbus. But when the climate machine starts to malfunction, causing extreme weather conditions, the students must use their newly updated scientific handbooks (and weather instruments) to stop the machine before it destroys the entire school.

A NOTE TO TEACHERS

Children encounter weather every day in a way that affects their lives and activities, making it the perfect topic for implementing STEM. Primary-grade students can participate in a host of weather-related activities for the classroom. In *The Weather Disaster*, you'll find everyday weather topics like clouds, rain, sleet, snow, and the water cycle, as well as more dramatic ones like tornadoes. The humor and excitement of the Mad Scientist Academy series make it fun for every student to learn science. It appeals to children through its combination of scientific information and a lively fictional storyline with characters like a vampire and a werewolf. Diagrams, charts, and step-by-step explanations work well for visual learners, while facts and definitions woven into the text help auditory learners. Throughout the story, the young characters model scientific problem-solving skills as they avert disaster and save the day. Below you'll find discussion questions that review and expand on the book's content, along with activities that give students their own problems to solve in science, writing, art, and game design.

ABOUT THE AUTHOR

Matthew McElligott is the author of many books for children, including *Mad Scientist Academy: The Dinosaur Disaster, Even Monsters Need Haircuts,* and the Benjamin Franklinstein series. Like a cumulonimbus cloud, he is associated with hot air, gray skies, and raining on parades. 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 and madscientistacademybooks.com.

Also by Matthew McElligott

This guide was created 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.

DISCUSSION QUESTIONS

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

1. In what ways is Dr. Cosmic a good teacher? How does he encourage his students to learn about science? Would you like to attend the Mad Scientist Academy?

2. Describe Professor Nimbus, her appearance, and her role in the plot. What does a meteorologist do? How do they help us?

3. Why does Dr. Cosmic want to go up in the air in his sky suit? How successful is his attempt? What do you think is the purpose of a weather balloon?

4. When some of the students go into the greenhouse, why does it get hotter and wetter? Describe the scientific causes.

5. How do the changes in the greenhouse affect the students? How do they deal with them? Explain how each student helps overcome the problem.

6. Meanwhile, other students go out to the swimming pool. What causes it to get so cold and snowy there?

7. How do the changes in the weather by the pool affect those students? How do they deal with the changes?

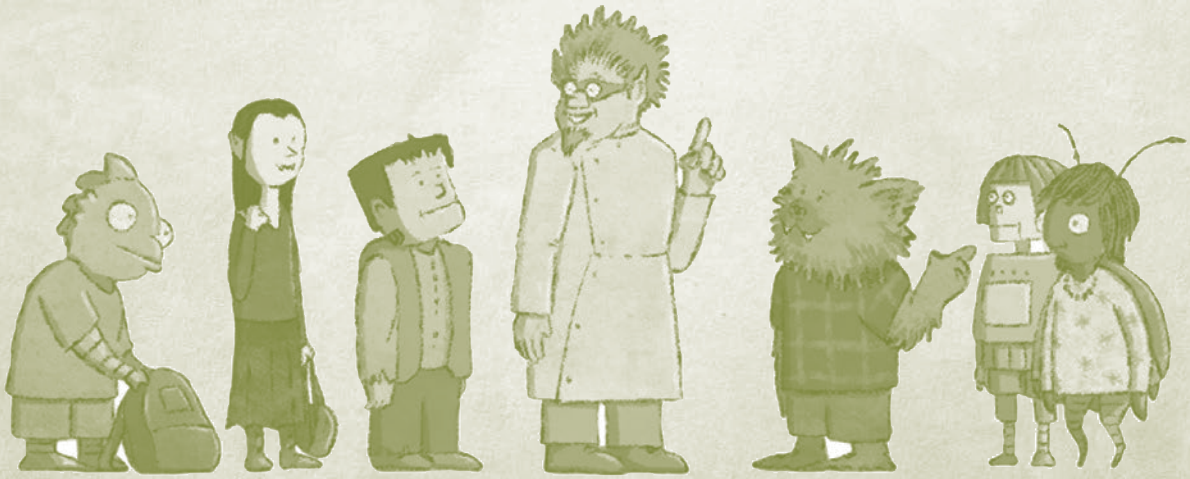
8. Why does lightning start to form at the school? How are lightning and electricity related to each other? When do you see lightning?

9. Why do the students want to create a tornado? What steps do they take to do it? Describe how a tornado forms, as explained in the book.

10. How does the author/illustrator add humor to the story? Find specific words, pictures, or situations that are funny. Talk about whether you think humor can help us learn.

11. Describe the CHAOS machine, naming as many parts as you can. What makes it seem like a real machine? What makes it look like a character?

12. Which parts of the book are imaginary? Which are informational? Why do you think the author/illustrator combined fiction and nonfiction to explore weather?



ACTIVITIES

Correlates to Common Core Anchor Standards for Reading Literature: K-3.4; Writing: K-3.2, K-3.3, K-3.7; Speaking & Listening: K-3.1; K-3.2; K-3.3; K-3.5.

A LEMONADE LESSON

As a simple experiment, have students fill a pitcher with lemonade and add ice cubes. Put the pitcher into a refrigerator or freezer for a few hours. Then take it out and place it in the warmest place in the classroom. When condensation forms on the outside, have students explain what causes it. Then share the lemonade!

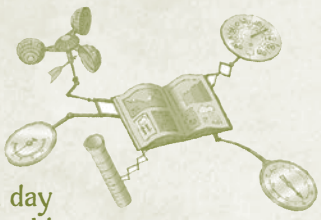
LIGHTNING AROUND THE WORLD

As a class, go to the satellite viewing website at the National Weather Service, which shows images of Earth as seen from weather satellites. (weather.gov/satellite) Explore the different views including infrared, visible light, and water vapor. Switch geographic areas from the forty-eight contiguous states to look at Alaska, Hawaii, Guam, Puerto Rico, and American Samoa. Discuss why it might be useful to know where lightning is striking.

WANT TO BE A GAME DESIGNER?

Creating a simple board game based on the book will help students review the plot and the obstacles that the characters overcome. Have students work in pairs or small groups to craft a playing board, tokens for moving, and ways to move, such as dice, a pointer, cards to draw, and so on. Once completed, have students play each other's games.

AND THE TEMPERATURE IS . . .



Every day have a student use a thermometer on the school grounds to record the temperature, including the date, day of week, and time. Ideally this would happen at the same time every day. Students can record their findings on the thermometer handout at the end of this guide. After a week or month, have students create a bar chart that will show the fluctuations in temperature.

MEET THE NEW STUDENT

Ask students to discuss the young characters in the book and identify what makes them unusual. Then have each student come up with a new character who will attend the Mad Scientist Academy. In writing or speech, students should describe their new character including name, appearance, background, and strengths. They can draw or paint portraits, echoing the art style of the book.

UP IT GOES!

Show your students this four-minute video that shows how a National Weather Service balloon is inflated and launched. (youtube.com/watch?v=jGQWUFEMxT8) Note the explanation that "attached to the balloon is the actual instrument called a radiosonde. The radiosonde measures temperature, pressure, and humidity; the instrument is tracked so that wind speed and direction can also be measured." Ask the class how it compares to Dr. Cosmic's trip into space.

HOW MUCH RAIN?

As a whole class or in small groups, make a rain gauge by cutting the top off a liter plastic bottle, saving the top. Put stones or gravel in the bottle to weigh it down and pour in water just to cover them. Starting where the water ends, mark the outside every half inch. Invert the top to form a funnel and secure it with waterproof tape. Put the bottle outside below open sky. Have students check it when it rains and mark a classroom chart to record the rainfall.

WEATHER WORD WALL

Designate a bulletin board or wall in the classroom to post weather-related words. Have students identify words in *The Weather Disaster* and start making a class list. Then brainstorm other weather words not in the book. Assign each student one of the words, and ask them to print the word in large letters on an 8" x 11" sheet of paper, add the definition, and draw a picture related to the word.

POSTER PARTY

A number of weather concepts are explained in *The Weather Disaster:* atmosphere, wind, the water cycle, types of precipitation, thunderstorms, and tornadoes. Have students work in small groups to create posters that use a combination of words and pictures to show the concept, including arrows, step-by-step panels, and other visuals tools where helpful. The group should then present the poster to the class and answer questions.

THE TEMPERATURE FOR TODAY IS . . .

NAME: _____

Date: _____

Day of the week: _____

Time: _____

Write down today's temperature:

Take a marker and draw a line from the bottom of the thermometer up to today's temperature.

Educators: Reproduce this sheet for your classroom.

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

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