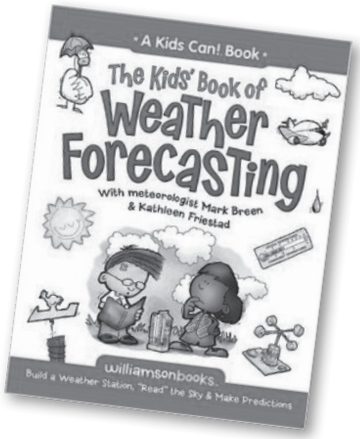
The Kids' Book of Weather Forecasting



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Illustrated by: Michael Kline
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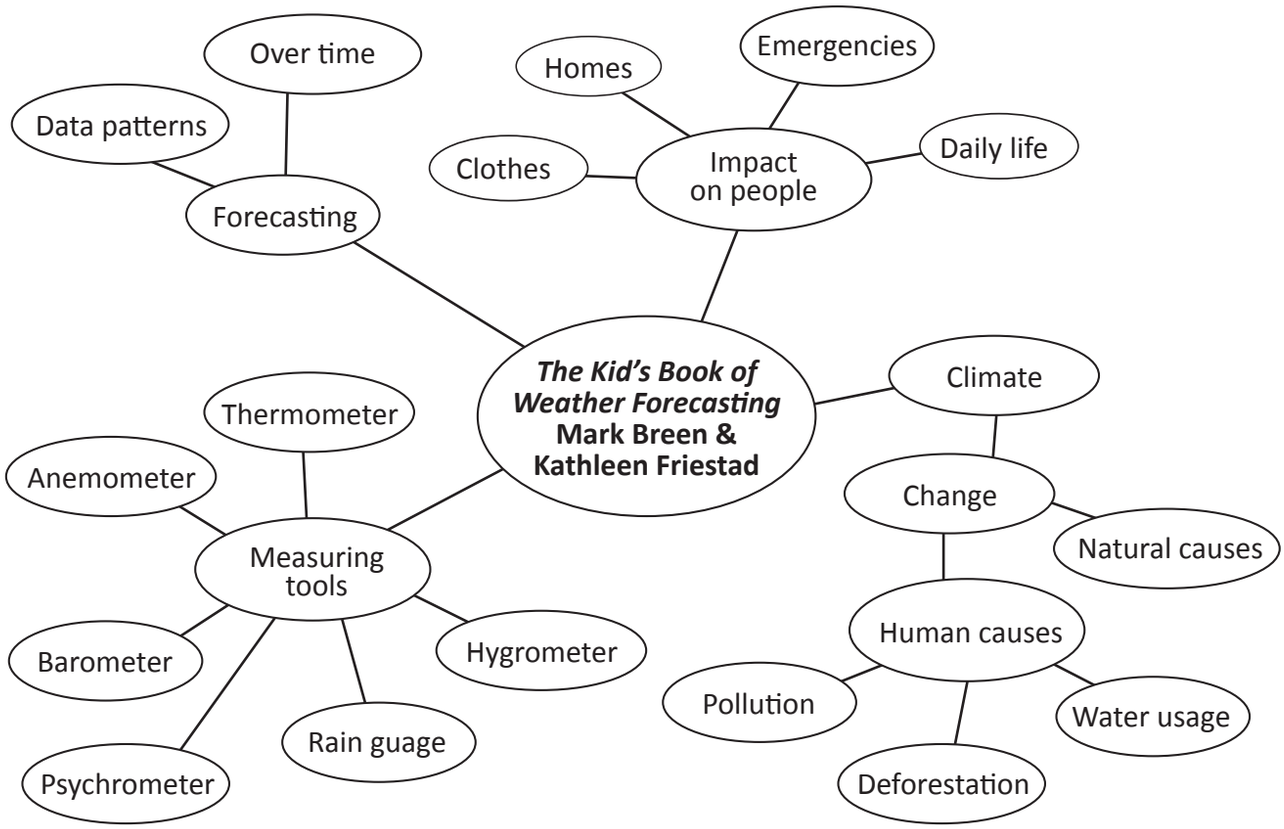
Major Topics:
Weather, Atmosphere, Energy From the Sun, Weather Forecasting

Generalization
Students will learn that weather impacts all living things in positive and negative ways.

Summary
Weather affects everyone every day. Measurements of the air, sun, wind, and rain can help us understand and forecast the weather. Simple measurement instruments we can make ourselves allow us to collect data, analyze the information, look for patterns, and make predictions for future weather. Observing the weather is fun, helpful, and important.

Science & Literature Connections Book Correlation
Cloudy With a Chance of Meatballs
Written by: Judi Barrett

Concept Map


The Kid's Book of Weather Forecasting
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Forecasting
Over time
Data patterns
Impact on people
Homes
Emergencies
Clothes
Daily life
Measuring tools
Thermometer
Anemometer
Barometer
Hygrometer
Rain guage
Psychrometer
Climate
Change
Natural causes
Human causes
Pollution
Water usage
Deforestation

Thinking Questions Based on Bloom's Taxonomy

1. **Knowledge/Remember:**
   What does a meteorologist do? List the four main components of weather (air, sun, wind, water). What is the atmosphere? Define *weather* and *climate.* Tell what is measured by each of the following instruments: rain gauge, hygrometer, psychrometer, barometer, and anemometer.

2. **Comprehension/Understand:**
   How does weather affect us every day? Why is it important to have accurate forecasting for weather events? Describe a time when a weather forecast was helpful to you or your family.

3. **Application/Apply:**
   How do special instruments help us forecast the weather? What instruments are key to weather forecasting (thermometer, rain gage, hygrometer, psychrometer, barometer, and anemometer)?

4. **Analysis/Analyze:**
   How are weather patterns related to climate and seasons? Why are the seasons different on the same day depending on where in the world you live? Compare the seasons in your town today with those in the opposite hemisphere. (If you are in the Northern Hemisphere, what is the weather like for you? What season is it in the Southern Hemisphere?) Why might people want to travel to another hemisphere for their winter vacation?

5. **Synthesis/Create:**
   If you could design a new weather instrument, what would it be and what would it do? How does the overall weather pattern impact the clothes we wear? Can you create an all-weather outfit? How about an all-weather house?

6. **Evaluation/Evaluate:**
   What is your favorite season? What criteria did you use to pick your favorite season? Compare and contrast your criteria with someone else's. What human activities add to our changing climate (e.g., polluting, cutting down trees, using water)? If people continue to abuse the environment, what do you predict will happen to the global climate?

K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

3-ESS2-1: Represent data in table and graphical displays to describe typical weather conditions expected during a particular season.

3-ESS2-2: Obtain and combine information to describe climates in different regions of the world.

3-ESS3-1: Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

Common Core State Standards

English Language Arts:

RI.K1: With prompting and support, ask and answer questions about key details in a text.

W.K.2: Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

W.2.7: Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

SL.K.3: Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

SL.K.5: Add drawings or other visual displays to descriptions as desired to provide additional detail.

W.1.7: Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions).

W.1.8: With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

RI.2.1: Ask and answer questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

W.2.6: With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.

W.2.8: Recall information from experiences or gather information from provided sources to answer a question.

SL.2.5: Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

RI.3.1: Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as a basis for the answers.

RI.3.9: Compare and contrast the most important points and key details presented in two texts on the same topic.

Follow-Up Activities

- Keep a weather log for one month looking at cloud cover, rainfall, temperature, wind, and other weather factors that interest you. Use your weather log to identify patterns for the month. Compare your data with data from a previous year (see almanacs, print or online, e.g., http://www.almanac.com/weather/history) to see how your month differs. Compare your averages for the month with averages from several past years (e.g., average rain fall and temperature). Is your month's data similar to other years? How does it differ?

- Build weather instruments shown in the book and use them to track and log the weather. Look for patterns in the weather and compare them with past years. How do the shapes of these tools help them do their job?

- Design a new weather instrument. Draw or sketch your instrument to show how it works. What does it do and why is it important? Write out a plan to try and convince a company to make and sell your product.

- Write a poem, song, or short story using weather as the theme. What kinds of weather are you describing? How does it make you feel? What happens during different kinds of weather?

- Create all-weather clothes, homes, or vehicles. What will you need to have to adjust to temperature, moisture, wind, and sun exposure? Make a model or sample of your design and explain how it works.

- Research climate change and the causes associated with it. Write a newspaper article stating your view and giving data to show if and how people are contributing to climate change.

Next Generation Science Standards:

K-PS3-1: Make observations to determine the effect of sunlight on an area.

K-PS3-2: Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.

K-ESS2-2: Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

K-2-ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

W.3.1: Write opinion pieces on topics or texts, supporting a point of view with reasons.
W.3.7: Conduct short research projects that build knowledge about a topic.
W.3.8: Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

Mathematics:
MP.2: Reason abstractly and quantitatively.
MP.4: Model with mathematics.
MP.5: Use appropriate tools strategically.