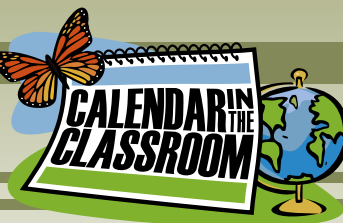




Weather Journal



Overview

Like local meteorologists, students will document weather data in a science journal as they learn what information is needed to forecast the weather. Students will use data in the *Minnesota Weatherguide Environment™ Calendar* to compare temperature averages over the last 30 years to the actual daily temperatures.

Background

Meteorology is the scientific study of the atmosphere especially as it relates to weather conditions. Meteorologists study long-term global atmospheric patterns and climatic conditions that affect our Earth. (Weather is what happens day to day. Climate refers to weather conditions occurring in a specific area over a long period of time.)

The *Minnesota Weatherguide Environment™ Calendar* contains much data on daily temperatures over time. The Normal maximum and minimum temperatures listed for each day are temperatures that have been averaged over a 30-year period.

On a daily basis we turn to news sources and the Internet to learn about current weather conditions that affect our daily lives: temperature, precipitation, wind speed and notice of any approaching storms. To supplement daily data, the *Minnesota Weatherguide Environment™ Calendar* offers monthly commentaries by the Kare11 meteorologists, scientists who interpret the local weather patterns for us on T.V. , online, and via weather apps.

Your students will be collecting some first-hand weather data and you can add interest by also using the Internet to seek additional information. In addition to looking up daily weather data online for comparison with your schoolyard data, check out the following weather related links on Kare11.com:

<https://www.kare11.com/weather>

<https://www.kare11.com/weatherminds>

<https://www.kare11.com/grow-with-kare>

Warm Up

1. Ask the students the following questions: What is a meteorologist? What kinds of jobs do they have? What do they include when they give a forecast? Write the responses on a piece of chart paper or on the board. Students should state that a meteorologist studies: wind, temperature, precipitation (in all its forms), weather patterns and their movement across the continent. Have the students name all of the possible forms of precipitation.

2. Explain that students will be recording weather data. What can they measure and record? Ideas include: maximum and minimum temperatures of the day, the average maximum and minimum temperatures for a week, precipitation, and wind speed and direction and

Time:

Day 1: 30-40 min.
Thereafter: 5-10 min. daily.

Skills

Observing
Recording
Data collecting
Predicting
Forecasting
Drawing conclusions

Vocabulary

meteorologist
meteorology
maximum
minimum
prediction
average
normal
precipitation
Beaufort Scale
forecast

Materials Needed:

- Chart paper
- *Minnesota Weatherguide Environment™ Calendar*
- Science Journals
- Thermometer
- Rain Gauge
- Internet access (optional)

cloud type and cover.

For comparison purposes, measurements should be made at the same time and location each day. To collect the most accurate maximum and minimum temperatures on the school grounds make the measurements at the beginning and end of the school day. Discuss with students the time of day and how the most accurate temperatures would usually be earlier and later in the day.

The Activity

1. Look at the information provided each day on the *Minnesota Weatherguide Environment™ Calendar*.
 - Discuss how the normal temperatures are determined?
 - How will we measure wind speed? Direct students to the Beaufort Scale found in the back of the calendar (on or near page 54). Wind speed can be estimated by observing physical effects on the environment. Students can even estimate the wind chill by using an adjacent chart.
 - Clouds can be identified by using the Cloud Chart in the back of the calendar.
2. Let the students know that they will be recording daily weather information in their science notebooks. It may be a good idea to designate a section of the notebooks to document the weather. Keep a daily record on the class bulletin board for comparison and discussion purposes.
3. Practice in forecasting might be achieved by having students record a weather forecast for the next school day.
4. Daily temperatures can be found online on any local television news website or on a variety of weather apps. Another option would be setting up an outside thermometer somewhere on school grounds where students could take daily readings.
5. In order to collect precipitation data, consider placing a rain gauge outdoors and/or a post with a ruler mounted on it to measure snowfall. Daily precipitation data can also be found online or by using weather apps. Data you collect can be compared to daily and monthly precipitation in the *Minnesota Weatherguide Environment™ Calendar*.

Wrap Up & Assessment

1. Students should begin a routine of recording in their journals the weather information each day.
2. As students continue the procedure of documenting the weather each day, they can summarize their recordings at the end of each week by writing a short paragraph that describes the actual weather as it compares to the averages.

Questions for Discussion

- How could knowing and understanding the daily temperatures and precipitation help us? We would have a better idea of what to expect and how to dress for the weather or plan outdoor activities.
- Think about people and jobs that may rely on daily weather information. What might they be? Construction workers, pilots, snowplow drivers, etc.
- How did people predict the weather before television, radio, or the internet? They looked for signs in nature, cloud types, behaviors of animals. It might be interesting to introduce students of the *Farmers' Almanac*. www.farmersalmanac.com/

Extensions

- Students graph information of temperature maximums and minimums after a month of recording.

Resources

- *Minnesota Weatherguide Environment™ Calendar*
online: <https://jeffersfoundation.org/programs/calendar-in-the-classroom/>
- For more information about wind measurement and the Beaufort Scale, see 'Measuring the Wind,' another weather-themed lesson in *Calendar in the Classroom*.

Minnesota Academic Standards

3-D Science Standards

Science Practices:

3. Planning and Carrying out Investigations
4. Analyzing and Interpreting Data
5. Using Mathematics and Computational Thinking
8. Obtaining, Evaluating and Communicating Information

Crosscutting Concepts:

1. Patterns
2. Cause and Effect: mechanism and explanation

Disciplinary Core Ideas:

ESS2: Earth's systems

K: Make daily and seasonal observations of local weather conditions to describe patterns over time. Examples of patterns may include that it is usually cooler in the morning than in the afternoon

2nd Grade: Represent data to describe typical weather conditions expected during a particular season. Examples of data may include temperature, precipitation, and wind direction. Data displays can include pictographs and bar graphs

ELA Standards and Benchmarks

Grade	Benchmark with Anchor Standard/Code
K	Write routinely (may include a combination of drawing, dictating and writing), with support and guidance. (W2: 0.2.2.1)
1	Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation). (W1: 1.2.1.1) Write routinely, through a combination of writing, drawing and speaking. (W2: 1.2.2.1)
2	Use correct punctuation (end punctuation), spelling (high frequency words), and capitalization (first word in sentence and proper nouns) authentically in writing. (W1: 2.2.1.1) Write routinely, including illustration, for a range of tasks, purposes and audiences (e.g. personal interest, enjoyment, academic tasks). (W2: 2.2.2.1)

Standards met by additional lesson idea in the Extensions:

(next page)

Math Standards

Grade	Strand	Anchor Standard	Code	Benchmark
K	Data Analysis	Data Sciences: Identify, formulate and investigate statistical questions by collecting data considering cultural perspectives, analyzing and interpreting data and communicating the results.	0.1.1.1	Notice and describe patterns in data-rich situations. (MP1, MP7)
1	Data Analysis	Data Sciences: Identify, formulate and investigate statistical questions by collecting data considering cultural perspectives, analyzing and interpreting data and communicating the results.	1.1.1.1	Notice and describe patterns in data-rich situations and create statistical investigative questions with teacher guidance. (MP6, MP7)
2	Data Analysis	Data Sciences: Identify, formulate and investigate statistical questions by collecting data considering cultural perspectives, analyzing and interpreting data and communicating the results.	2.1.1.1 2.1.1.3	Notice and describe patterns in data-rich situations and create statistical investigative questions. (MP6, MP7) Collect and use data to consider and decide what data will answer a question. Represent the data as drawings, picture graphs, dot plots (a.k.a. line graphs or line plots) and with technology. Communicate observations. (MP3, MP5)