Weather Watch

Details & Academic Standard Connections

Description

Weather Watch is a 60-minute program where students work with COSI's newly certified Storm Spotter to learn how changes in air pressure and temperature can affect the weather. Before the program, students will take and use readings from barometers and thermometers to help them predict basic weather patterns during the program. They will also explore air pressure using everyday objects and understand why changes in weather often occur around cold and warm fronts.

Relevant Grade Levels

Grades 4-7

Pricing

$220 per connection (includes the cost of one kit)
$200 per connection for quantity discount (must sign up for 10 or more Video Visit programs in a school year)
$190 per connection for TWICE (password must be on the reservation in order to receive discount)

Companion Kit

A companion kit with supplies for 30 students is included in the price of your program. The kit includes pre- and post-visit activities along with materials needed for the program. Pre-program activity includes recording and interpreting readings from barometers and thermometers to formulate predictions of the weather to come. Pre- and post-visit activities include experiments involving air pressure, convection currents, weather symbol interpretation and the prediction of simple weather patterns. With the exception of paper and pencil, all the supplies needed for the above activities are provided in the kit. Additional kits of materials (supplying 30 students) may be purchased for $65 each.

MORE ➢

Weather Watch Details & Academic Standard Connections, Page 2

Reservation Information

The Weather Watch program can be requested at the date and time you choose by using our online reservation system found at: https://education.cosi.org/eers/. To reserve a time and date, log in to the reservation system, select the month you would like the program, click on the date you are interested in, and confirm the time you want is available. If COSI is free at that time, scroll to the bottom of the screen and select "request a show not scheduled." From there, choose "Weather Watch" in the drop down menu and the desired time (Eastern Time), and fill out the information form. reservation system found at: https://education.cosi.org/eers/

Technical Information

COSI can accept ISDN or IP connections. For good video quality, we strongly recommend a connection speed of 384 kbps or higher. Weather Watch is a single point connection between COSI and one participating school.

Alignment with Ohio Academic Content Standards for Science

Science and Technology
- 4.1 (Grade 4): Explain that air surrounds us, takes up space, moves around us as wind, and may be measured using barometric pressure.
- 4.2 (Grade 4): Identify how water exists in the air in different forms (e.g., in clouds, fog, rain, snow and hail)
- 4.3 (Grade 4): Investigate how water changes from one state to another (e.g., freezing, melting, condensation and evaporation)
- 4.4 (Grade 4): Describe weather by measureable quantities such as temperature, wind direction, wind speed, precipitation and barometric pressure.
- 4.5 (Grade 4): Record local weather information on a calendar or map and describe changes over a period of time (e.g., barometric pressure, temperature, precipitation symbols and cloud conditions).
- 4.6 (Grade 4): Trace how weather patterns generally move from west to east in the United States.
- 7.5 (Grade 7): Make simple weather predictions based on the changing cloud types associated with frontal systems.
- 7.6 (Grade 7): Determine how weather observations and measurements are combined to produce weather maps and that data for a specific location at one point in time can be displayed in a station model.

MORE ➢

Weather Watch Details & Academic Standard Connections, Page 3

• 7.7 (Grade 7): Read a weather map to interpret local, regional and national weather.
• 7.9 (Grade 7): Describe the connection between the water cycle and weather-related phenomenon (e.g., tornadoes, floods, droughts and hurricanes).

Physical Sciences:

• 4.1 (Grade 4): Identify characteristics of a simple physical change (e.g., heating or cooling can change water from one state to another and the change is reversible).

Scientific Inquiry:

• 4.1 (Grade 4): Select the appropriate tools and use relevant safety procedures to measure and record length, weight volume, temperature and area in metric and English units.
• 4.2 (Grade 4): Analyze a series of events and/or simple daily or seasonal cycles, describe the patterns and infer the next likely occurrence.
• 4.3 (Grade 4): Develop, design and conduct safe, simple investigations or experiments to answer questions.
• 5.1 (Grade 5): Select and safely use the appropriate tools to collect data when conducting investigations and communicating findings to others (e.g., thermometers, timers, balances, spring scales, magnifiers, microscopes and other appropriate tools).
• 5.2 (Grade 5): Evaluate observations and measurements made by other people and identify reasons for any discrepancies.
• 5.3 (Grade 5): Use evidence and observations to explain and communicate the results of investigations.
• 6.2 (Grade 6): Choose the appropriate tools or instruments and use relevant safety procedures to complete scientific investigations.
• 6.3 (Grade 6): Distinguish between observation and inference.
• 7.1 (Grade 7): Explain that variables and controls can affect the results of an investigation and that ideally one variable should be tested at a time; however it is not always possible to control all variables.

Scientific Ways of Knowing:

• 4.2 (Grade 4): Record the results and data from an investigation and make a reasonable explanation.
• 4.4 (Grade 4): Explain why keeping a record of observations and investigations is important.
• 5.2 (Grade 5): Develop descriptions, explanations and models using evidence to defend/support findings.
• 5.4 (Grade 5): Identify how scientists use different kinds of ongoing investigations depending on the questions they are trying to answer (e.g., observations of things or events in nature, data collection. and controlled experiments).

MORE ➢

• 5.5 (Grade 5): Keep records of investigations and observations that are understandable weeks or months later.
• 6.1 (Grade 6): Identify that hypotheses are valuable even when they are not supported.
• 6.2 (Grade 6): Describe why it is important to keep clear, thorough and accurate records.
• 6.3 (Grade 6): Identify ways scientific thinking is helpful in a variety of everyday settings.
• 6.4 (Grade 6): Describe how the pursuit of scientific knowledge is beneficial for any career and for daily life.
• 7.1 (Grade 7): Show that the reproducibility of results is essential to reduce bias in scientific investigations.

Alignment with National Science Standards*

*From National Science Education Standards by the National Committee on Science Education Standards and Assessment, National Research Council. National Academies Press, 1996.

Students in 5th grade should know that:

- When liquid water evaporates, it turns into water vapor in the air and can reappear as a liquid
- when cooled, or as a solid if cooled below the freezing point of water.
- Water moves in the air from one place to another in the form of clouds or fog, which are tiny
- droplets of water or ice, and falls to the Earth as rain, hail, sleet or snow.
- Uneven heating of the Earth causes air movements (convection currents).
- Causes and effects of severe weather.
- How to use weather maps and weather forecasts to predict local weather, and that prediction
- depends on many changing variables.
- The Earth's atmosphere exerts a pressure that decreases with distance above the Earth's surface,
- and is the same in all directions.

Students in 5th grade should be able to:

- Identify a single independent variable in a scientific investigation and explain what will be learned
- by collecting data on this variable.
- Record data using appropriate graphic representation (including charts, graphs, and labeled
- diagrams), and make inferences based on those data.
- Draw conclusions based on scientific evidence and indicate whether further information is needed
- to support a specific conclusion.

Students in 6th grade should know that:

- Convection currents distribute heat in the atmosphere and oceans.
- Differences in pressure, heat, air movement, and humidity result in changes of weather.

Students in 6th grade should be able to:

- Develop a hypothesis.
- Construct appropriate graphs from data and develop qualitative statements about the
- relationships between variables.