

Picnic Possibilities

Summary

Students will learn to use weather data to plan outdoor activities.

Materials

- [Man in the Bathtub handout](#)
 - [Utah Weather Data handout](#)
 - [Utah Weather Map](#)
- Crayons/colored pencils and scissors for each student
Tape or "wall tack"
Graph paper
Checkered table cloth
- [Waterdrop Glyphs](#)
 - [Temperature Glyphs](#)

Background for Teachers

Utah's weather is never boring! Our state has just experienced a six year drought, and recently several weather disasters, including severe flooding in the St. George region. While the whole state is temperate in nature, we have eight different USDA plant hardiness zones. There are technically four climatic regions; Desert, Steppe (Semiarid), Humid Continental-Hot Summer, and Undifferentiated Highlands. This indicates great variation in annual high and low temperatures across the state. Because weather mainly moves from west to east in the United States, the presence of the Sierra Nevada Mountains on the border of California and Nevada helps to create the desert environments of the Great Basin.

Planning outdoor activities can be a challenge in Utah. While precipitation may not be a problem in many months, the potential for high summer temperatures and freezing winters in many Utah regions makes "comfortable" outdoor days limited. We do not experience the frigid, wet cold of the central United States, or constant extreme heat of more southern states.

Weather is just one subject area where it is important to use data charts and graphs. Being able to interpret data from graphic organizers can be crucial to everyday life, like planning outdoor recreation. Data appears frequently in newspapers, magazines, brochures, and on Web pages as charts and graphs. The following activity allows students to use data for real-life purposes.

Intended Learning Outcomes

5. Make mathematical connections.
6. Represent mathematical situations.

Instructional Procedures

Invitation to Learn

Show the overhead of [The Man in the Bathtub](#) . Ask the students if they can tell a story about the water level in the bathtub by reading the graph. Have them share ideas with the class or as partners. Encourage them to use the XY coordinate plane.

Instructional Procedures

This activity requires advanced preparation. Teacher will need to copy the [Waterdrop Glyphs](#) and [Temperature Glyphs](#) onto cardstock, cut out individual squares, and laminate.

Provide each student with a copy of the [Utah Weather Data handout](#). A copy of a simple Utah map would also be helpful. Place students in pairs.

Ask students to look at the data and share anything they notice. Responses may include: It looks like there is more precipitation in the Wasatch Mountains. It's hotter in St. George. Tell the students that they will be helping to organize the data in a way that is easier to read.

Review the background information with the students. You may wish to emphasize that this activity will allow them to see the differences in temperature and precipitation in the northern and southern parts of the state. You may also wish to discuss comfortable temperatures for being outside to picnic.

Students create a graph for a given table on the data sheet with their partner. Review the kinds of graphs that they have used or worked with and discuss possible formats for the weather graphs. Let them know that at the end of the lesson they will be making a decision about what month would be the best month to plan a picnic in both regions of Utah. They will need to write why these months are ideal.

Give students graph paper to make their graphs on.

Once the graphs are complete, display them in a central location. Ask them to describe how these graphs might be sorted. You may choose to write these suggestions on a chalk or white board. Ask the students if looking at an individual graph gives them all the information they need to decide which month is best for picnicking in the north and in the south. Tell them that they will be creating another graph in a future lesson that puts all the information together.

During another session, tell the students that they will be working as a class to display all the data on one big graph—a bar graph using pictographs.

Display the “picnic cloth” on the board. Explain that graphs are used to make data “pop-out” in a more usable way. After the data has been displayed, partners will work together to choose the best month for a picnic in both regions.

Show the students the *Waterdrop* and *Temperature Glyphs* and explain that each waterdrop represents 2” of rain, and each thermometer represents 5 Fahrenheit. (You may choose to use different ratios.) Draw a key on the board. Across the X-axis (horizontal line), write the months of the year so that a red strip is for the rain and a white and red strip are for the high and low temperature averages. Using the information on the *Utah Weather Data* handout, choose either the Wasatch or desert data to begin with.

Working together as a class, determine how many of each picture will be needed to complete the first bars for January. Assign cooperative groups to take two months and complete the graphs as they determine the number of pictures they will need.

When the graph is complete, have groups determine which month is the best picnic month and why. Each individual should record their response in a journal. Answers will vary. Look for logical connections to the weather graph. For instance, “July is the best month in the Wasatch because there won't be a big chance of rain and the temperature is warm, but not too hot.” Have groups share their possibilities. Encourage students to question each other for clarification.

Repeat steps 3 and 4 for the other region.

At the lesson conclusion, use the Rubric for Picnic Possibilities to have students score themselves on the activity. You may wish to add your own scores in another color.

Extensions

Have students decide the “worst” month to plan an outdoor picnic.

Using the Utah maps, have students locate counties, cities or national/state parks that are located either in the southern or northern regions of Utah.

Ask students to gather data about the daily high and/or low temperatures in a particular Utah city for a one-week period of time and to create a line graph to show their data.

Invite students to research average monthly precipitation and temperatures for your city or area. Have them create graphs and list what types of advantages and disadvantages that area may

have if they were trying to ski, hike, or travel.

Students create displays about Utah weather using their own ideas about graphing and charting. Students may research other weather phenomena (e.g., lightning or high winds) about a given Utah area and create graphs about this data.

Students can play the Ant Attack game to practice coordinate graphing. Remember to have students call the x axis number first.

Materials

- [Ant Attack Game Instructions](#)
- [Ant Attack Game Board](#)
- [Ant Attack Food](#)

Family Connections

Students can plan an indoor/outdoor picnic with their family and predict whether the weather will be best for the indoor or the outdoor version of their picnic.

Take home the *Ant Attack game* and play with a family member.

Assessment Plan

- [Rubric for Picnic Possibilities](#)
- Teacher observation

Bibliography

Research Basis

Heidorn, P.B. (1999). Image Retrieval as Linguistic and Nonlinguistic Visual Model Matching. *Library Trends*, 48(2), 303-325.

The article reviews the research on how people use models of images in an information retrieval environment. It describes the human use of images (nonverbal representations) as predating human language and explains that language evolved out of a need to communicate about the world. Verbal language is limited in that it is dependant on a shared experience or shared vocabulary. Some aspects of our mental models are not easily described using words. For example, our brains perceive millions of color indexes and we only have relatively few color names. Some iconic representations are simple and some can be more complex. Our mental models have many aspects including color and shape. Some images are content-based, while others are concept-based.

The Institute for the Advancement of Research in Education. (2003). *Graphic Organizers: A Review of Scientifically Based Research*. URL: <http://research@inspiration.com>

The report is a complete review of 29 research studies about the effectiveness of graphic organizers. Studies were carefully selected by meeting the institute's criteria for scientifically-based research as defined by the *No Child Left Behind Act*. In the section about the use of graphic organizers for thinking and learning skill, researchers found that students scored higher on tests, retained and transferred learning, and improved critical thinking skills, with the use of graphic organizers. In a section about other classroom work, researches concluded that problem solving, performance, comprehension and retention of learning were all enhanced by the use of graphic organizers.

Authors

[Utah LessonPlans](#)