Alliance Created State Giant Traveling Map Lesson

Title: Comparing Arizona's Temperatures

Recommended Grades: 4-7

Time Needed: 30 minutes

Objectives:
Students will:

- Compare and contrast the geographic features of Arizona by researching seasonal temperatures
- Use the Giant Map to acquire, process, report and predict information after collecting data on seasonal temperatures in Arizona
- Practice averaging numbers
- Reinforce the vocabulary terms of climate v. weather
- Identify the relationship between elevation and climate

Materials:
Preparation:

- Prepare data charts for each student. Read further to determine how you will structure the activity.
- Assign students into color groups with corresponding season. (blue = winter, green = spring, red = summer, yellow = fall)

Rules:

- Shoes are not allowed on the map. Please have students remove shoes before walking on the map. Students must wear socks. No bare feet.
- No writing utensils on the map. Keep all writing utensils and other sharp objects 12 inches from the edge of the map.

Directions:

1. Have students sit around the perimeter of the map in predetermined colorgroups. (red base camp, blue, etc.)
2. Introduce the concept of using data collection to investigate trends by explainingthat:
   - Data helps tell a story of what has already happened.
   - Data helps us predict the future based on trends.
   - Sometimes data can be linked to other kinds of information to make ourunderstanding of what is happening clearer.
3. Ask one or two students to identify trends in temperature they have noticed where they live (eventually a student should share that it is

colder in the winterand temperatures change by seasons and that it is colder in some areas and warmer in others).

4. Have one student stand on the map and identify where he/she thinks Arizona isnormally colder. Have another student do the same thing but stand where he/she thinks it is normally warmer. Have the students explain their choice of location.
5. Discuss that the data the groups will be using is the AVERAGE temperature for a city. To get this average, the climatologists take the average high temperature for **each day in the month** (ex: 97 degrees) and the average low temperature for each day in the month (ex: 72 degrees) and average the 2 numbers together. (97 + 72 = 169 169 divided by 2 = 85.5 rounded to 86 degrees) This number represents the average temperature. You may need to review the rules of rounding up and down.
6. Present the task: Each group will determine the average temperature of an Arizona city by averaging data.

For grades 4 and 5:

- Show students a set of data strips from the Weather Cards (ex: Douglas in the Winter 2012 to 2017). Model how they will take the 6 numbers (60, 45, 59, 49, 47, 48) and add them together and then divideby 6 to get the average. Allow calculators if this is the classroom norm.
- Before you hand out the Weather Cards, tell the students that as they have determined the average for their assigned city, they need to come up to you. They will announce their city, their season, and their calculated average. If they are correct, they will receive a colored disk (blue for winter, green for spring, etc.) with the average temperature on it. Their next task is to put the disk on the map near the city. Or you can have them just hold the disks and place them on in order (first all the winter disks go on the map—draw conclusions (see next step), take winters off the map and have students placespring disks on the map, etc.
- Model getting a Weather Card for one of the cities, averaging the temperatures using the Weather Card Averaging Sheet, taking their averageto the teacher for verification of the right answer, and then placing the disk on the map when told by the teacher.
- Distribute the red (summer) Weather Cards to the Red group, green (spring) Weather Cards to the Green group, etc. Have each group divide the 10 cities'Weather Cards as evenly as possible among the students in the group or theycan work together as a group. Have them average the temperatures on the Weather Card Averaging Sheet.

- Have students place their disks on the map as they are instructed (as they getthe disks from the teacher or after all of the calculations are made and then place them on by season).

For grades 6-8:

- Show students the chart entitled The History of Arizona's Average Temperatures for Selected Places. Tell them that they willbe assigned one of the cities on the chart and a season. Their task is to average the temperatures for that city and that season. Then they will comeup to the teacher and they will announce their city, their season, and their calculated average. If they are correct, they will receive a colored disk (blue for winter, green for spring, etc.) with the average temperature on it. Their next task is to put the disk on the map near the city. Or you can have them just hold the disks and place them on in order (first all the winter disks go onthe map—draw conclusions (see next step), take winters off the map and have students place spring disks on the map, etc.
- Distribute at least 2 charts to each color group. Tell students in the Blue group that they will be averaging the winter temperatures for each of the 10cities. Then assign the green group—spring, red—summer, and yellow—fall.Pass out the Weather Card Averaging Sheet if you think they need the extra help.

7. When all of the groups have placed their disks on the map, ask students todiscuss in their groups:
   - What trends do they notice?
   - What accounts for the differences?
8. Have various students add the Elevation Cards to the map—placing them near the cities already discussed. If using the Arizona Landscape map, have a studentrelate the various colors on the legend for elevation to the Elevation Cards just added. Now what trends do they see? (The higher the elevation, the colder theaverage temperature will be for each season.)
9. End the lesson by a discussion of weather v. climate. Looking at temperatures(day to day reports of weather) over a long period of time give us climate (the big picture) of a region or place.

Extensions:

- Students can research and add data before 1950 looking for changes over time.
- Students can research a short article on global warming. Students can predict future temperature trends for the next decade, century.

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Arizona Standards (While other grade levels may apply, Arizona standards are given for 4th grade as an example.)

Social Sciences

Geography

The use of geographic representations and tools help individuals understand their world.

4.G1.1 Use and construct maps and graphs to represent changes in the Americas over time.

Mathematics

Number and Operations in Base Ten

4.NBT.A.3 Use place value understanding to round multi-digit whole numbers to any place.

4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using standard algorithm.

4.NBT.B.6 Demonstrate understanding of division by finding whole-number quotients and remainders with up to four-digit dividends and one-digit divisors.

National Geography Standard

Element 1: The World in Spatial Terms

1. How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

2. How to use mental maps (a person's internalized picture of a part of Earth's surface) to organize information about people places, and environments in a spatial context

3. How to analyze the spatial organization of people, places, and environments on Earth's surface

Vocabulary:

weather: day to day temperatures and conditions of the atmosphere
(Example: At 4:00 PM on March 21, it was 90°F outside and the wind was blowing 5 miles per hour.

climate: pattern of temperatures and conditions of the atmosphere
(Example: Phoenix has an average high temperature of 104°F and zero days of rain in the month of June.

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