Popcorn Population

Students will explore Arizona’s population from the last 100 years using a timeline. They then will collect data on their classroom population and will graph it.

<table>
<thead>
<tr>
<th>Author</th>
<th>Karen Guerrero</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade Level</td>
<td>2-3</td>
</tr>
<tr>
<td>Duration</td>
<td>2 class periods</td>
</tr>
</tbody>
</table>

**National Geography Standards**

**ELEMENT ONE: THE WORLD IN SPATIAL TERMS**

2. How to use mental maps to organize information about people, places, and environments in a spatial context

**ELEMENT FOUR: HUMAN SYSTEMS**

10. The characteristics, distribution and complexity of Earth’s cultural mosaics.

**Arizona Geography Strand**

**Concept 1 The World in Spatial Terms**

GRADE 2

PO 4 Construct tally charts and pictographs to display geographic information (e.g., birthplace – city or state).

GRADE 3

PO 5 Construct charts and graphs to display geographic information.

**Other Arizona Standards**

**Strand One: American History**

Concept 1: Research Skills for History

Grade 2

PO 2. Place historical events from content studied in chronological order on a timeline.

Grade 3

PO 1. Use timelines to identify the time sequence of historical data.

**Concept 10: Contemporary United States**

Grade 2

PO 1. Use information from written documents, oral presentations, and the media to discuss current local and state events

Grade 3

PO 1. Describe current events using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).

**Mathematics Common Core Standards Measurement and Data**

2.MD.10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

3.MD.3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.

**Overview**

Arizona’s population has grown from 204,354 in 1910 to almost 7 million in 2010. Students will explore and speculate on the population of Arizona over the past 100 years. They then will sequence the decade data from the US Census Bureau, will look at the population of the class and will collect and graph data based on the information gathered.
Popcorn Population: Explore Arizona’s Population

Purpose

In this lesson students will learn about Arizona’s growth in population over the past 100 years using math skills. They will then collect and graph data based on the information gathered.

Materials

- US Political Map
- Arizona Census Data found at: http://www.npg.org/states/az.htm
- Timeline Pieces (cut out)
- Arizona Population Popcorn worksheet
- Session 2: Popcorn Picture Graph
- Arizona Population Popcorn Poster (enlarged) and Poster Pieces (cut out)
- Popcorn Piece for Self-Portrait
- Markers, crayons or colored pencils
- 3 different types (kettle, buttered, low fat, etc) of popcorn
- String or yarn or masking tape (1 per pair/group)

Objectives

The student will be able to:
1. use technology to gather data
2. use timelines to sequence historical data
3. collect, organize, represent and interpret data

Procedures

Prior to the lesson: Cut out the Popcorn Timeline Pieces. Open up the Census data ahead of time for viewing.

SESSION ONE
1. As a group look at the U.S. map (preferably a large classroom map or a projected map) and ask students to locate Arizona. Ask students what population means and whether they think Arizona’s population is more than or less than what it was 100 years ago. Have students explain why they think so.

2. Tell the students that today they will be learning more about the population of Arizona using technology. They will view information found online to organize data into a timeline.

3. After reviewing the online data, have students in pairs or groups put the popcorn population pieces into a timeline (using a string or piece of tape for the timeline). Have them review their timeline with the online sites and then record the population numbers on their Arizona Population Popcorn worksheet.

4. Tell the students they are part of the population of Arizona and that they will be collecting data on the classroom population tomorrow. They will need to draw a picture of themselves on their Popcorn Piece for Self-Portrait and then cut it out. These will be used for Session 2.

SESSION TWO

Prior to the lesson: Pop the 3 kinds/colors of popcorn for data collection activity. Place the large popcorn population chart on the wall for review.

5. Look at the Arizona Population Popcorn Poster. Have students comment on what they see and why they think Arizona’s population grew so much.

6. Explain that they will be collecting and charting data and then will display the data in a graph.

7. Explain that they will chart this data creating a picture graph. Create a vertical line on the white board. Underneath this line write Like. Then draw a second vertical line with words Don’t Like underneath. Add a title to the top: Popcorn.

8. Have the students take out their Popcorn Piece for Self-Portrait from yesterday. Ask students how many of them like popcorn, collect their self portraits, and create a picture graph by affixing the self-portraits to the first vertical line. Ask how many do not like popcorn, collect their self-portraits, and affix to the second vertical line.

9. Now add Number of Students and numerals to the left of the bar graph (as single numbers up to the maximum number in a category or by 2’s or 5’s depending on grade level).

10. Ask students a series of questions:
    - How many students like popcorn?
    - How many students don’t like popcorn?
    - Are there more of less students who like popcorn?
    - If we add all the responses together, how many people gave a response?
    - How many more people like popcorn than don’t like popcorn?

11. Take the self-portraits off the board. Repeat the activity with new labels. Title the graph: Class Population. The three vertical lines will be: Born in Arizona, Born in Another State, and Born in Another Country.

12. Use the self-portrait pieces from the previous session to create a picture graph of the class.
Popcorn Population: Explore Arizona’s Population

Again ask problem solving questions like before.

13. Pass out a small amount of 3 different types of popcorn to each group. Give the students a chance to think of names for the vertical and horizontal axes as well as the title. This time instead of using the self-portraits, have the groups tally their preference in regards to the 3 varieties of popcorn using scrap pieces of paper. As they finish their snack, have students call out the data to create a class tally sheet on the board.

14. Have students use their Session 2: Popcorn Picture Graph to graph the data.

Assessment

Students will complete the Arizona Population Popcorn worksheet with 80% accuracy.

Students will graph the popcorn data on the Session 2: Popcorn Picture Graph. Points will be given for appropriate:

- Title (5)
- Count of data (10)
- Labels for both axes (10)
- Numerals on Y axis (5)
- Mastery will be considered 80% or higher.

Extensions

Students can continue to use their self-portrait popcorn pieces to graph new data on other preferences (favorite color, places they’ve been, etc).

Students can conduct another data collection activity using another food/drink of choice during snack time.

Sources