Now You See Them . . . Now You Don’t: The Movement of People In and Out of Arizona

Students study the movement of people through the use of the census, and then they create a class census.

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Grade Level  4-5
Duration  2 class periods

National Geography Standards
Element 4: Human Systems
9. The characteristics, distribution, and migration of human population on Earth’s surface.

Arizona Geography Strand 4
CONCEPT 1 World in Spatial Terms
GRADE 4
PO 4 Construct charts, and graphs to display geographic information.

GRADE 5
PO 6 Construct maps, charts, and graphs to display geographic information.

CONCEPT 4 Human Systems
GRADE 4
PO 1 Describe the factors that have contributed to the settlements, economic development and growth of major Arizona cities.
PO 2 Describe how Mexico and Arizona are connected by the movement of people, goods and ideas.

Arizona Math Standard
STRAND 2 Data Analysis, Probability, and Discrete Mathematics
CONCEPT 1 Data Analysis (Statistics)
GRADE 4
PO 1 Formulate questions to collect data in contextual situations
PO 2 Construct a single-bar graph, line graph or two-set Venn diagram with appropriate labels and title from organized data
PO 3 Interpret graphical representations and data displays including single-bar graphs, circle graphs, two-set Venn diagrams, and line graphs that display continuous data.
PO 4 Answer questions based on graphical representations and data displays including single-bar graph, circle graphs, two-set Venn diagrams, and line graphs that display continuous data.
PO 5 Identify the mode(s) of given data.

GRADE 5
PO 1 Formulate questions to collect data in contextual situations

Overview
Working together, the students will create a class census to examine the movement of people into Arizona. The students will present the data in an appropriate graph and then analyze the information.

Purpose
This activity is designed to help students understand the purpose of the census and why it is important to complete one. It is also designed for the students to construct and analyze graphs.
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Materials
- Sample of information gathered from the census
- Arizona Population by Year (between 1980 – 2001) either on an overhead transparency or a hard copy for each pair of students
- Sample Questionnaire to help generate class questionnaire
- Chart paper to collect information and then for each group to display their graphs
- Markers or colored pencils
- Grading Rubric for Graphs and Responses
- Calculators are optional

Objectives
The student will:

1. Gain an understanding of a census and its usefulness.

2. Explore and analyze the outcome of a mock census in order to understand the purpose of a census.

3. Generate and analyze data by placing the data in an appropriate graph and draw conclusions from the results.

Procedures
SESSION ONE
1. Introduce the students to the idea of a census. Start by telling them that the Emperor of Rome in approximately 5 A.D. wanted to know how many people were in his kingdom. So he ordered all the people that lived in his kingdom to return to the towns in which they were born so they could be counted. This was one of the first censuses in recorded history.

2. Remind the students their families took a census in the year 2000. Ask them why they think this information was collected.

3. Ask them what types of questions they think are included in a census. Write their responses on the board.

4. Read some of the actual questions that are found on the census questionnaire.

5. Discuss why these questions are asked. How do you think this information is used to help provide for our needs? Add these responses to the board.

6. Distribute the table showing the census results for Arizona for the years 1980 – 2001 or use an overhead transparency. Ask the following questions:
   - What patterns do you see over the years? (Keep track of student responses.)
   - Why do you think people move? Why would they move to Arizona? (pull factors)
   - Why would people move out of Arizona? (push factors)
   - Do the births and deaths have an impact on the number of people in Arizona?

7. Make comments and questions according to student responses.

8. Have students calculate the growth from one year to the next. Students do not need to calculate all of the data. Use the data for the ten-year information only, or split the years up and have each group do only two or three of the years. Students may use a calculator.

Questions for discussion:
- Which years had the greatest growth? Which years had the least growth?
- Why do you think this is so?
Students can practice reading the numbers aloud and writing them as words. (Not all of the numbers need to be read or written)

9. Introduce the questionnaire activity
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• Tell the students that they are going to create a Census Questionnaire for the class.
• Ask for suggestions of types of questions that they might want to ask. For example, are you a native of Arizona? If not, where did you live before, and why did you move here? How many people live in your house? What do your parents do for a living?

The students then decide on 4 or 5 questions to ask. The number of questions will determine the number of groups that will be working together in the next day’s activities.

10. Download the sample questionnaire and adjust the questions as needed.

11. Tell the students to take the questionnaire home and have their parents help fill it out. Remind them to bring it back to class or their information will not be included. This may be a good time to discuss with them that missing information happens in the real census.

SESSION TWO

1. Have the questions written on separate chart paper or on the board. The students will place their information on the charts.

2. After the students have gathered all the information, talk to the class about what they see. Look for patterns.

3. Talk about how they might organize the information better in order to find any patterns. Some suggestions might be a line plot, bar graph, circle graph, etc.

4. Split the class into groups. Give each group one of the questions to graph. As the students are working, walk around the class and check for understanding. Give them the rubric for grading so they know what to include in their project.

5. Place completed graphs on the walls so all students are able to see them.

6. Have students determine the mode, median, and mean of the data on the graphs. Also have them look at the outliers and determine what outliers are.

7. Have the students work in groups to analyze graphs. Have each student write a response to share with the class and then turn them in.

Assessment

Math: The students will create graphs. Use the Grading Rubric to score the graphs. A score of 3 or higher is mastery.

Geography: After a class discussion write the following questions on the board:
• What did the table of census information tell us about the movement of people in and out of our state?
• Why is a census taken every 10 years?
• Name two ways the census is used?
• Looking at the graphs write three conclusions our class came to about our data

Use the Grading Rubric to score the answers. A score of 3 or higher is mastery.

Extensions

Have the students conduct a school wide or grade level survey to graph. Have students use spreadsheets to generate data, if possible.

Sources

U.S. Census Bureau; www.census.gov