Can You Hear Me Now? How a Country's Wealth Influences Communication

Students will make and solve problems using scatterplots created by using data from a variety of countries. These data will help students explore relationships between different countries and how their citizens get information using popular culture items such as, TVs, cell phones, and the Internet.

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Grade Level
6-8

Duration
2 class periods

Overview
Changes in technology help people gain better access to information now more than ever before. In 2004, about three-quarters of humanity had access to at least one television set. Using scatterplots, students will investigate
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how the wealth of a country influences the ability of people to obtain access to communication from electronic sources (TV, cell phones, internet).

**Purpose**
The purpose of this lesson is for students to use scatter plots to discover relationships between the wealth of a country and the access of its citizens to modern methods of communication.

**Materials**
- Teacher Information
- Student worksheets
- World Map (no countries)
- Overhead of world map
- Pencils
- Rulers
- Raw Spaghetti
- Countries of the World Wall Map or atlas

**Objectives**
The student will be able to:

1. Locate on a world map: Argentina, Australia, Bolivia, Botswana, Canada, China, Cote d'Ivoire, Fiji, Germany, Guatemala, Hong Kong, India, Indonesia, Italy, Kuwait, Mexico, Saudi Arabia, Singapore, South Africa, United States, and Uzbekistan.

2. Distinguish between folk and popular culture.

3. Construct scatterplots to show the relationship between the wealth in a country and the access to communication and information technologies.

4. Identify and make predictions from trend lines for each scatterplot generated.

**Procedures**
1. Using on overhead of the world map, tell students they will be looking at data from 21 countries from around the world.

2. Have students locate and label the 21 countries on a world map. Students can volunteer to identify countries on the world map overhead or they can work individually, using copies of the world map.

3. Use an overhead of the Prior Knowledge Chart and have the class list information they may know about each country. This can include relative economic wealth, physical characteristics (including mineral resources), and cultural characteristics.

4. The homepage for this lesson has information about each country (obtained from the CIA Factbook).

<table>
<thead>
<tr>
<th>Country</th>
<th>CIA Factbook Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>CIA Factbook Link</td>
</tr>
</tbody>
</table>

Click on the column that fits the country and answer the student questions.

5. Talk with students about the Rise and Spread of Electronic Information, and how access to communication is a two-way street with economic activity. Explain that in a global world, countries need modern communication to compete.

6. Distribute the data table: Does wealth of a country affect the ability to get information? Explain to students how the data was generated. GNP means Gross National Product or the total value of goods and services produced in a country in a year. For each country, the GNP per person was calculated by dividing the GNP...
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by the population. The Persons per TV, Persons per Cell Phone and Person per Internet Connection were all calculated by dividing the population by the total number of each of these items in the country.

7. Tell students they will be making scatterplots of this data. They will be comparing Gross National Product per Person and Number of Persons per TV, Number of Persons per Cell Phone, and Number of Persons per Internet Access. Tell students to round the GNP per Person data to the nearest $500.

8. Students should use the graphs provided on the student worksheets. As students graph the data, have them label each point with the name of the country (abbreviations or numbers are fine).

9. Students will draw a best fit or trend line for each graph. Students can use a piece of raw spaghetti or a clear ruler to estimate the position of the trend line. The class may want to check their trend line against the answer key. Remember, trend lines are estimations, so lines may vary. Accept a wide range of possible lines. The important thing is that students see a negative trend (that less money means that more people have trouble getting access to a TV, a cell phone, or an Internet connection).

10. Students should answer questions about trends shown by the scatterplots.

11. Whole group discussion may help students find and explore unusual country outliers and clusters on each scatterplot.

Assessment

Math Assessment: Student scatterplots can be graded for graphing all 21 points in the "approximately" correct position. The important thing is that students create a negative trending scatter of points.

In grading, remember that trend lines are estimations, so lines will probably vary. Accept a wide range of possible lines (and some students may even draw a curve). The important thing is that students draw a negative trend. Student answers to multiple choice questions can be graded as well. Mastery for both is 80% or higher.

Geography Assessment: Students can be tested on correctly identifying the location of the 21 countries used in this lesson. Students can be given the multiple-choice quiz. Both these can be graded for Mastery at 80% or higher.

Students can be asked to write a short essay explaining the connection between country wealth and access to modern communication. This essay can be graded for ideas and organization. Use the 6 Traits rubric. A score of 4 or higher will be considered mastery.

Extensions

Students could investigate other aspects of popular culture (persons per automobile, persons per radio, persons per video game system) and graph them in a similar manner.

Students research the GNP for a county not included in the data set for this lesson, predict scatterplot results, and then graph GNP, Persons per TV, Cell Phone, and Internet Access.

Use photographs of each country from such sources as National Geographic CD box set that has photographs searchable for each country or Peter Menzel's Material World: A Global Family Portrait or the National Geographic
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website, which is also searchable by country with photographs.

**Sources**

http://www.cia.gov/cia/publications/factbook/

http://www.unesco.org/culture/worldreport/