Making Maps with Population Data

Tami Huegel – Forest City High School, Forest City, IA

Grade Level (Req.): 6th-12th grade	Content Area (Req.): World Geography, Physical Geography, Mathematics	Unit (Opt.):
Connections to Other Disciplines (Opt.): • • •		
Time Frame (Req.): 1-2 weeks (depends on how many types of maps you want students to create)	Goal (Req.): To create choropleth maps to show population density, growth rates, and sex ratios. To create dot maps to show major population centers. To get students thinking critically about the population problem in India.	
	Objective (Req.): Students will create choropleth maps using the 3 methods of equal frequency, equal interval, and natural breaks. Students will compare the 3 maps for accuracy and bias. Students will analyze the maps and develop hypotheses about population to plan for the future.	
Materials Needed (Req.): • State maps of India • Colored pencils • GIS Mapping program like ArcView (for upper levels only) • 2001 Census Data (included) • Calculator • Scratch paper • India stencils	New Vocabulary (Opt.): • • • • •	
Anticipatory Set/Introduction [Inquiry Question is required] (Req.): What is population like in India?		

Instructional Sequence/Procedure (Req.):
1. Explain the different types of maps, and how to create them.
2. Have students create different types of maps.
3. Some examples include: cartograms, dot maps showing population in urban centers, choropleth maps comparing populations, growth rates, or sex ratios in various states.
4. At the end of the map unit, compare the maps and explain the purpose and bias of each type of map.
5. You could also have a group discussion to talk about the population issues in India – what the problems are now, and what the future looks like for the country.
6. Additional Notes: For advanced students, try using a computer program like ArcView to create the different kinds of maps. This is a great way to incorporate technology into this lesson.
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Formative Evaluation (Req.): Class discussion	Assessment (Req.): The maps the students will create. As the teacher, you will need to look at their data sets to see they created the map correctly. The choropleth maps should use graduated color to make them easier to read.

Iowa Core Curriculum Standards Used (Req.):
- Geography, grade 9-12: Understand the use of geographic tools to locate and analyze information about people, places, and environments.
- Geography, grade 9-12: Understand how human factors and the distribution of resources affect the development of society and the movement of populations.
- Geography, grade 9-12: Understand how human actions modify the environment and how the environment affects humans.
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Common Core Curriculum Standards Used (Opt.):
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NGS Standards Used (Req.):
- How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective
- How to use mental maps to organize information about people, places, and environments in a spatial context
- How to analyze the spatial organization of people, places, and environments on Earth's surface
- The characteristics, distribution, and migration of human population on Earth's surface
- How human actions modify the physical environment
- How to apply geography to interpret the past
- How to apply geography to interpret the present and plan for the future
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Five Themes of Geography Used (Req.):	School District Standards and Benchmarks (Opt.):
- Place	-

• Human-Environmental Interaction • Region • •	• •

21st Century Universal Constructs (Opt.):

Other Disciplinary Standards (Opt.):
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Other Essential Information (Opt.):

Other Resources (Opt.):
- The census data included in this lesson came from the National Institute of Urban Affairs, Delhi, India. Additional census information can be found on the India Census website at http://www.censusindia.net.
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