Educational Outreach Event Report

Name: Community Mapping Project - GIS Training for Educators

Participant and Author of Report:
Joseph Kerski, Geographer, USGS

Dates: 10-13 Oct 2001

Location:
College Station, Texas

Highlight Submitted:

Texas Teachers Explore the World with Geographic Information Systems

USGS Geographer and Education Specialist Joseph Kerski will conduct a geographic information systems (GIS) workshop for teachers from throughout southeast Texas from 10 to 12 October 2001 in College Station, Texas. Teachers in the workshop will examine the spatial distribution of hurricanes of Texas, including the Galveston hurricane of 1900, population change by county during the 20th Century, landforms, climate, and vegetation by investigating computer maps, aerial photographs, graphs, tables, and satellite images. GIS is used daily by thousands of professionals from marketing specialists to wildlife biologists to city planners. GIS has been shown to promote inquiry-based learning in an interdisciplinary, problem-solving environment in the classroom. (Joseph Kerski, Denver, Colorado, (303) 202-4315, jjkerski@usgs.gov).

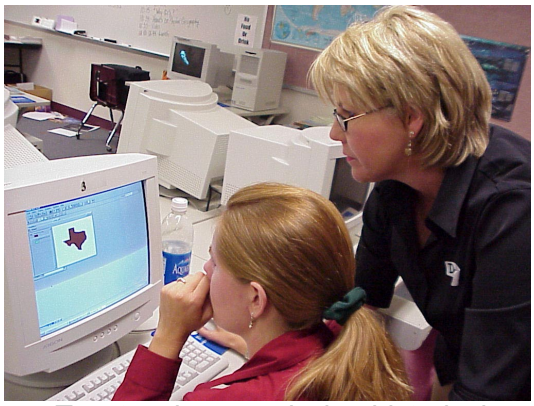
A&M Consolidated High School is the only high school in College Station; enrollment is over 2,300 students. It is one of the first high schools in the country to offer AP Geography the administrators and teachers provide one of the highest levels of support for geography that I have seen in any school district.

At this year's GeoTech, an annual geography technology conference in Dallas where I gave a keynote address, workshops, and operated a USGS exhibit, I met Debbie Robertson. Ms Robertson is a geography teacher in the College Station Independent School District. She wrote a technology-in-geography grant that had as one of its goals to jump-start the use of GIS in the school district. Part of the grant paid my way to travel to this school district and work with the teachers in a GIS institute.

Texas includes many teachers who use GIS in the curriculum, and its universities are strong in geography, earth sciences, and in geography education, particularly UTEP, University of North Texas, University of Texas-Austin, and Southwest Texas State University. The Texas Council for the Social Studies and the Texas Science Teachers Association are both strong. The state boasts one of the few organizations at the state level strictly concerned with spatial data, the Texas Natural Resources Information System (TNRIS).

The USGS has a strong presence in Texas. In terms of outreach, we participate in UTEP's career fairs and recently conducted a GIS institute there (see other report), and we have participated in GeoTech for 5 years as well as the Texas GIS Forum and other events.

Texas Gulf Coastal Plain topography in College Station.



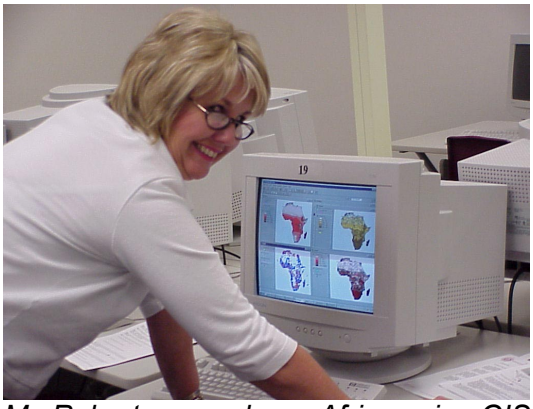
Two teachers analyzing historical population trends in Texas.

We used GIS to explore the interactions of the natural, cultural, and physical environment. We applied maps, charts, aerial photographs, databases, and images to analyze trends and patterns.

We discussed implementation issues of GIS in the classroom.

The institute was not marketed to just geography teachers, but to all teachers who want to support students in exploring the world in a problem solving, computerized environment. Social studies teachers present included those who teach government, biology, geography, environmental studies, history, math, and even horticulture.

Three Grade 11 students participated in the institute with the teachers. Student-teacher learning is an ideal situation, whenever it can happen, and these students were excellent in their grasp of GIS and spatial analysis.



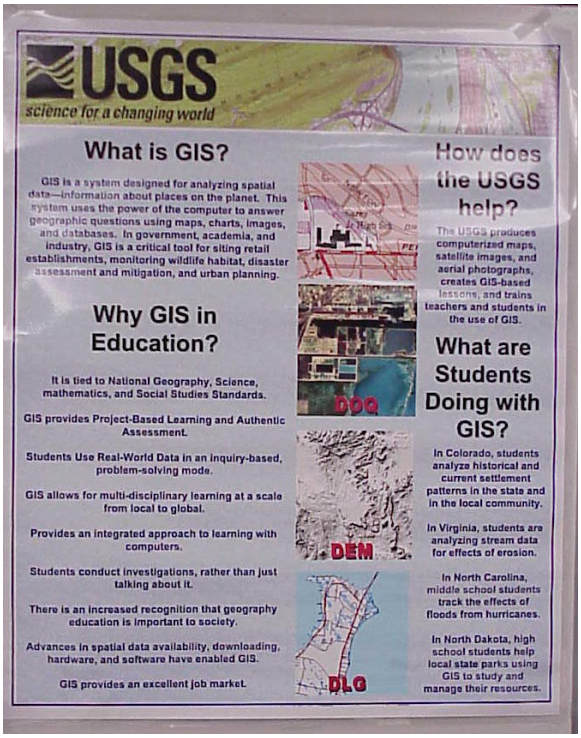
Ms Robertson analyzes Africa using GIS as part of a world geography lesson.

Students and teachers analyzing Texas hurricanes.

Collecting coordinates using GPS receivers is an important part of most GIS institutes.

After collecting the GPS coordinates, we brought the points into ArcView GIS, attributed them, and overlayed them onto a DRG and a DOQ.

The participants were shown that GIS is a system designed for storing, updating, analyzing, displaying, and manipulating information about places on the planet, otherwise known as spatial data. This system uses the power of the computer to answer geographic questions by arranging and displaying all kinds of data about places in a variety of ways such as with maps, charts, and tables.



One of the GIS In education posters that I created for the institute.

Summary:

GIS in education is interdisciplinary and has as much to do with systemic change and networking than strictly with the use of inquiry-based tools such as GIS.

Once again, the positive feedback from all participants confirmed that this type of educational outreach is a good opportunity for the USGS, to work with educators at a value-added level. Many wrote on their daily evaluations things like, “I did not realize how much fun this is” or “I did not realize the many applications of GIS.” Teachers will be working with much USGS and other spatial data for these GIS-based activities that they incorporate into their

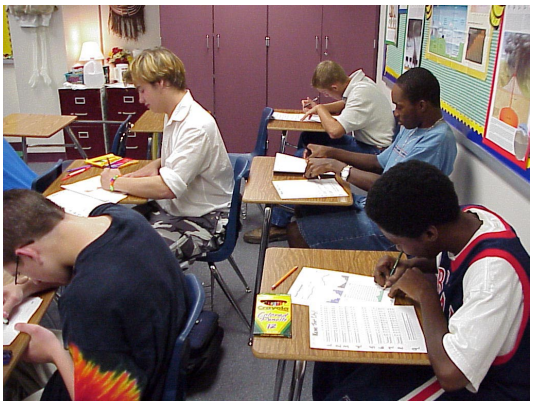
curricula, and recognize that we do provide training that is relevant to their needs.

It also provided a great opportunity to network with teachers from a specific school district and with professors from Texas A&M University.

Increased customer spatial awareness and training is essential for the future of all agencies such as the USGS, who rely on a geographically informed public and Congressional funding. When we work with a group in a long-term relationship, I firmly believe this brings us more benefit than a one-time presentation, particularly in the case of providing educators the opportunity to use and apply our digital data.

Participants were shown through articles and a movie that GIS is used in other classrooms throughout the world. For example, working with the Colorado Division of Wildlife, high school freshmen conducted public surveys and open houses and used GIS to draft a comprehensive wildlife area management plan, including presenting their final recommendations to the Wildlife Commission. Rhode Island students studied the economic impact of rivers in their communities. In North Dakota, high school students helped local state parks use GIS to study and manage their resources. Middle school students mapped out alternative sites for a local landfill and ways to monitor its operation. Vermont middle school students used GIS technology, science journals, and photos to determine the origin of a local pond and its ecological relationship to the community.

Ms Robertson works with one of her geography students.



Students in Ms Robertson's class making climate graphs of major world cities--an activity usually reserved for college level students.

Agenda

Day 1

Introductions

What is GIS?

Hands on cultural geography

Definition and applications of GIS in the curriculum

Hands-on physical geography - earthquakes and volcanoes

County Demographics

Population Change 1900-2000

Texas Country Profiles

Hurricane analysis

Day 2

GPS collection and integration

Tornado analysis

Brazos County TIGER and Census analysis

Self-exploration of data and procedures

Next steps: training, networks, data, books

Texas A&M University Visit

I took the opportunity to visit Texas A&M University to meet with Dr Sarah Bednarz and Dr Bob Bednarz. As Bob Bednarz is the 2001 President of the NCGE (National Council for Geographic Education), I asked him for his advice in my new elected position on the NCGE Research and External Relations Board. Dr Sarah Bednarz is one of the foremost geography education researchers, active in creating the national geography education standards, the Geographic Education National Implementation Project, and Mission Geography with NASA, AGS, and the AAG, among other projects. It was excellent to speak with all of these faculty members.

Acknowledgements

I thank Debbie Robertson for writing the grant that enabled me to participate in this institute. I would like to thank all who participated in this institute for their good humor, enthusiasm, and willingness to experiment with new technology and methods. I also appreciated the assistance of Bob Strawn in the computer laboratory.

Right after I took this picture of the Texas A&M Aggies practicing for their Big 12 Game with the University of Colorado, one of the coaches came running up to me, wanting to make sure I wasn't a football spy! I assured him that I was a geographer and put in a plug for geography education. I didn't mention that I was from Colorado!

A trip to southeast Texas apparently would not have been complete without some Texas barbeque, according to the participants.

end of report