

GIS in the K–12 Curriculum

by Nicole Minni

If a child's educational experience could be inspired and brought to a higher level of spatial thinking in multiple disciplines, wouldn't you want them to have that opportunity? It would be a chance for them to explore a variety of geographic information, ask questions, find answers, create solutions based on what they have learned, and even apply their findings in and around their community. A powerful tool called Geographic Information Systems (GIS) can be used to understand the physical world and the processes affecting it. GIS incorporates computer software and hardware, data sources, people, and organizational structures in a system that allows for the storage, retrieval, analysis, and display of information about a specified area of the earth. People and organizations worldwide use this technology to facilitate and enhance their daily work and studies. Dominoes Pizza, the U.S. Postal Service, UPS, Conectiv, realtors, emergency-management and environmental agencies, and state and local governments are just a few of the organizations using GIS today. Also, CBS used GIS during its 2004 presidential-election coverage, and the CBS show *The District* used GIS in every episode to help fight crime.

For the past eight years, the Geographic Information Systems Education Working Group (GISEWG), a subcommittee of the Delaware Geographic Data Committee (DGDC), has been working diligently with K–12 teachers and educators to welcome them to the world of GIS. GISEWG comprises approximately 12 GIS professionals in the state who use GIS within their daily job functions. GISEWG believes that this multidisciplinary technology is an essential element that would enhance today's teachings.

With hands-on GIS experience, children will develop critical spatial-thinking skills that can be applied in all disciplines and everyday life. According to the Environmental Systems Research Institute (ESRI), "Geographic information systems can help learners of all ages understand the world around them. GIS helps students and teachers engage in studies that promote critical thinking, integrated learning, and multiple intelligences, at any grade level. In classrooms across the country and around



the world, educators are using GIS in the study of topics as varied as Environmental Studies, History, and Economics."

Delaware is very fortunate to have compiled many types of state geographic data. GISEWG can help teachers working on curriculum with geographic references or those who have utilized the GPS Lab at the Delaware Center for Educational Technology (DCET) and want to incorporate their data into GIS. We can gather geographic data, provide free downloadable mapping software called ArcExplorer (Mac- and PC-compatible), create mapping projects to meet a teacher's specific needs, and present information to your class on mapping or geospatial information related to a class's current curriculum.

GISEWG projects have included: creating a watershed map for the seventh-grade watershed unit, working with DCET in the development of a GPS Lab, creating ArcExplorer projects for a fourth grade's land and water unit, and working with the Outdoor Education Center at Ingram Pond to incorporate GPS locations of bluebird nesting boxes into a GIS. In fall 2005 GISEWG held its first inservice GIS workshop for teachers' professional development day; it was very well received.

Members have also given presentations for Geography Awareness Week, as well as for the Democracy Project cluster and upcoming Watershed cluster, both through the University of Delaware.

A student contest is held each year at Delaware's Annual GIS Conference. Entries have ranged from posters, transparent-overlay maps, 3D models, to slide presentations. Previous themes have been "What does Geography Mean to you?," "Building a Map - One Layer at a Time," and "Putting a Face on Disaster - The Impact Natural Disasters Have on

People." This year's theme is "Migration, Change to the Human Situation - The Effect that Migration Has on People." There is also an Annual GIS in Education Award, presented by GISEWG to honor individuals who have been instrumental in furthering the use of spatial information in Delaware, inside or outside the classroom, through geographic information systems (GIS). The award is open to any K–12 teacher or youth leader working with the children of Delaware.

GISEWG is very passionate about what it does and looks forward to working with you to further your students' educational experiences. For information on members of GISEWG and resources that are available, please contact Chairman John Laznik (jlaz@udel.edu) or me (nminni@udel.edu).

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