Integrating Geospatial Technologies with Inquiry-based Learning to Investigate Energy

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Abstract:
Learn about an interdisciplinary inquiry unit that uses GIS and Google Earth to investigate the world's energy resources while promoting spatial thinking and analysis with diverse learners.

Energy Curriculum - http://www.ei.lehigh.edu/eli/energy/

Energy is an interdisciplinary technology-supported middle school science inquiry curriculum. This curriculum focuses on the world's energy resources. Students use geospatial information technology (GIT) tools including GIS (My World GIS or Web GIS) and Google Earth, and inquiry-based lab activities to investigate energy sources, production, and consumption. Energy is aligned to national science and environmental education standards.

Environmental Literacy and Inquiry (ELI) ELI Web site http://www.ei.lehigh.edu/eli/

Assessments for each learning activity are available using the following login and password:
Login: eliteacher
Password: 87dja92

Featured learning activities:

Exploring Solar Power Plants with Google Earth
http://ei.lehigh.edu/eli/energy/sequence/day6.html
Students use Google Earth to view solar power plants around the world. They take a Google Earth tour of 5 large solar power plants. Students also use the Google Earth measurement tool to determine perimeters of each solar plant.

Where is the Best Place to Locate a New Wind Farm?
http://ei.lehigh.edu/eli/energy/sequence/day11.html
Students use My World GIS or Web GIS to examine wind speed and land use patterns in Pennsylvania to determine the best place to locate a new wind farm in the Lehigh Valley and in Pennsylvania.

Investigating Hydroelectric Dams with GIS
http://ei.lehigh.edu/eli/energy/sequence/day15.html
Students use My World GIS or Web GIS to examine and query features of hydroelectric dams in the United States. They examine a shape file of 1,184 hydroelectric dams and analyze dams by height of dam, year of completion, river name, state name, watershed, reservoir volume, and capacity.

Energy Resources for the Isle of Navitas
http://www.ei.lehigh.edu/eli/energy/sequence/navitas.html
Students explore energy resources for one of three provinces on the Isle of Navitas. They analyze the benefits, costs, and environmental impacts of each energy source. They develop an energy policy statement to recommend an efficient combination of energy sources to provide sufficient power to the province while minimizing environment impacts.

Curriculum and support materials for Energy Investigations with GIS:

Where is the Best Place to Locate a New Solar Power Plant?
http://www.ei.lehigh.edu/eli/energy/sequence/solar.html

Where is the Best Place to Locate a New Wind Farm?
http://www.ei.lehigh.edu/eli/energy/sequence/wind.html

Investigating Hydroelectric Dams with GIS
http://www.ei.lehigh.edu/eli/energy/sequence/hydro.html

Investigating Coal Production and Consumption with GIS
http://www.ei.lehigh.edu/eli/energy/sequence/day25.html

Investigating Natural Gas Production and Consumption with GIS
http://www.ei.lehigh.edu/eli/energy/sequence/day26.html

Investigating Oil Production and Consumption with GIS
http://www.ei.lehigh.edu/eli/energy/sequence/day27.html

The Isle of Navitas
http://ei.lehigh.edu/eli/energy/sequence/navitas.html

ELI Energy Investigations Web GIS:
http://gisweb.cc.lehigh.edu/energy/

Isle of Navitas Web GIS:
http://gisweb.cc.lehigh.edu/navitas