Lesson Title	Flooding-GIS Day
Length of Lesson	1 day
Created By	Cheryl McLaurin, Matthew A. Lee, and Claire Babineaux
Subject	GIS and Technology
Grade Level	7th & 8th
State Standards	1.a-d, 6.a-c
DOK Level	3
DOK Application	Investigate, compare, hypothesize, draw conclusions, differentiate
National Standards	D: Earth & Space Science E: Science and Technology
Graduate Research Element	GIS Day

Student Learning Goal:
The students will learn how to navigate through GIS software, in this case arcgis.com. The students will use arcgis.com to answer questions about flooding issues associated with the state of Mississippi.

State Standards:

1. Draw conclusions from scientific investigations including controlled experiments.
    a. Design, conduct, and analyze conclusions from an investigation that includes using experimental controls. (DOK 3)
    b. Distinguish between qualitative and quantitative observations and make inferences based on observations. (DOK 3)
    c. Summarize data to show the cause and effect relationship between qualitative and quantitative observations (using standard, metric, and non-standard units of measurement). (DOK 3)
        • Tools (e.g., English rulers [to the nearest one-sixteenth of an inch], metricrulers [to the nearest millimeter], thermometers, scales, hand lenses, microscopes, balances, clocks, calculators, anemometers, rain gauges, barometers, hygrometers, telescopes, compasses, spring scales, pH indicators, stopwatches, graduated cylinders, medicine droppers)
        • Types of data (e.g., linear measures, mass, volume, temperature, area, perimeter)
        • Resources (e.g., Internet, electronic encyclopedias, journals, community resources, etc.)
    d. Analyze evidence that is used to form explanations and draw conclusions. (DOK 3)

6. Investigate the Earth's geological past. (E, L)

a. Identify the components/stages of a geological timetable and discuss how the environment (including animals and landforms) has changed in each period.
b. Describe methods and tools used in dating rocks and fossils.
c. Discuss Mississippi's geological areas.

National Standards:
D: Earth and Space Science: Structure of the Earth System

- Water which covers a majority of the earth's surface, circulates through the crust, oceans, and atmosphere in what is known as the "Water cycle." Water evaporates from the earth's surface, rises and cools as it moves to higher elevations, condenses as rain or snow, and falls to the surface where it collects in lakes, oceans, soil, and in rocks underground.
- Global patterns of atmospheric movement influence local weather. Oceans have a major effect on climate, because water in the oceans holds a large amount of heat.

Materials Needed (supplies, hand-outs, resources):
Materials needed for this activity include internet access (to access www.arcgis.com) and PowerPoint lecture.

Lesson Performance Task/Assessment:
As part of National GIS Day, the students will participate in an interactive GIS presentation. A PowerPoint presentation about the history of the Mississippi River, the occurrence of flooding in Spring 2011, imagery, an explanation of imagery, and Levees. Students will be assigned to a computer and will be asked to identify certain areas on a map using the interactive www.arcgis.com software. The students will be asked to present what they learned to the rest of the group.

Lesson Relevance to Performance Task and Students:
Students will expand their knowledge of the world around them and learn more about the state in which they live. They will use relatively current events, the flooding of the Mississippi River during the spring of 2011, in order to answer questions using a base map created for them.

Anticipatory Set/Capture Interest:
In lieu of recent flooding in the state of Mississippi, the students will be shown imagery of the Mississippi River Flood Plain before and after the flooding event in the spring of 2011. Some imagery will include pictures of land/water cover, crops lost due to flooding, and the levee system along the Mississippi River.

Guided Practice:

A teacher led discussion/lecture about the history of the Mississippi River, flooding, imagery, and levees. The teacher will then guide the students in navigating the internet to get to www.arcgis.com.

Independent Practice:
The students will be asked to identify certain areas on a base map and answering questions associated with it.

Remediation and/or Enrichment:
Remediation: Individual IEP
Enrichment: lesson extension for those who finish the assignment early

Check(s) for Understanding:
A student/teacher led discussion based on information presented throughout the day.

Closure:
Students will be asked to make a short presentation on what they learned from the presentation/lecture.

Possible Alternate Subject Integrations:
Math: the rate of water movement, flow, and flooding area can be calculated.
Earth Science: land use, land cover, mapping of flood plain etc

Teacher Notes:

Base map link:
http://www.arcgis.com/home/item.html?id=4ccb72e71a9242779e0f9f127af74b2f