Lesson Title	GIS Day Inquiry
Length of Lesson	One (50 minute) class period
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Subject	General Science
Grade Level	7th grade
State Standards	7th: Inquiry (1b, c, e, f)
DOK Level	DOK 3
DOK Application	Predict, Investigate, Compare and Contrast
National Standards	5-8: Inquiry (A), Science and Technology (E)
Graduate Research Element	Using GIS (Geographic Information Systems) is an important tool which can aid scientists in finding and analyzing spatial patterns in data. Many disciplines utilize GIS as a technology including geosciences and engineering.

Student Learning Goal:
MS 7th Grade:
Inquiry- (b) Organize data in tables and graphs and analyze data to construct explanations and draw conclusions, (c) Collect and display data using simple tools and resources to compare information, (e) Communicate results of scientific procedures and explanations through a variety of written and graphic methods, (f) Explain how science and technology are reciprocal.

National Science Education Standards of Content 5-8:
Inquiry (A)-- Use appropriate tools and techniques to gather, analyze, and interpret data.
Science and Technology (E)—Understanding about science and technology

Materials Needed (supplies, hand-outs, resources):
Computer, projector, website: ArcGIS.com (http://www.arcgis.com/home/webmap/viewer.html?webmap=390c74af827b497b9f18dcc29cd3c679), hail ball inquiry kit

Lesson Performance Task/Assessment:
This lesson will introduce ArcGIS as a technology, which is fast becoming a means by which spatial data can more accurately analyzed. This technology is inherently intertwined with science, as spatial and relationships in data can be determined more accurately and efficiently. The students in this lesson will be introduced to ArcGIS.com (a similar platform to ArcGIS desktop, but with fewer analytical capabilities) and work

through a severe weather scenario investigating in particular hail storms. The students will use ArcGIS as an interface to see data projected into graphics which they can easilyvisualize and analyze. The instructor will guide the students through an exercise in which they will have to inquire about, via looking at the data, various questions relating to hail. At the end of the lesson, the students will be asked to report back their findings in the exercise to a larger audience.

Lesson Relevance to Performance Task and Students:
ArcGIS is a powerful tool for analyzing data across a broad spectrum. The capabilities of ArcGIS allows the user to visualize data in a way where inferences can be made relationships can be seen. Having students introduced to ArcGIS as a technology will enable them to see how science and technology are inherently related. Science helps drive technology and the students will come away from the lesson with a better understanding of how essential science and technology are to an advancing society.

Anticipatory Set/Capture Interest:
The instructor will show the students a series of pictures relating to severe weather and then ask the students to name the severe weather event they think those pictures relate to. The students are expected to name severe weather events such as hurricanes and tornados but forget to name hail as a severe weather phenomenon.

Guided Practice:
The instructor will introduce the program ArcGIS found at ArcGIS.com. The students will see hail data displayed in the program along with a map of Mississippi and various landcover attributes overlayed on Mississippi. The students will be given information about each layer and will be asked to analyze what they see presented.

Independent Practice:
The students will work independently though the rest of the lesson. They will have a worksheet as a guide which will ask them to think critically, and write down their short answer responses to check for understanding. At the conclusion of the lesson, the students will reconvene with the rest of their peers and present their findings in a creative way.

Remediation and/or Enrichment:
Remediation- Individual IEP; work in groups
Enrichment – Ask the students to think about other severe weather events than could be mapped in GIS and how visualizing these events might be useful to the public.

Check(s) for Understanding:
Can the students identify each layer and explain each layers purpose in ArcGIS.com?

Are the students able to interpret the data, including understanding how the data show patterns?

Closure:

Question 1: What is the purpose of this kind of ArcGIS technology?

Question 2: How do science and technology relate to one another?

Possible Alternate Subject Integrations:

Earth Science, Technology

Teacher Notes: