

MAKE YOUR OWN GEOGRAPHIC INFORMATION SYSTEM (GIS)



Detail of “Night lights : [satellite view of the world]” by Goddard Space Flight Center, NASA, 2004. Geography and Map Division, Library of Congress



Image credit: ESRI

Did you know that the Library of Congress holds the largest and most comprehensive cartographic collection in the world? We have over 5.5 million maps, including 25,000 geospatial datasets. Geographic information systems (GIS), is a technological method to compile, organize, analyze, and visualize geographic data. GIS data is gathered by topic in discrete data units called layers.

Each data layer is gathered by topic (a ‘theme’) and is organized by:

-  **points** for buildings or city centers
-  **lines** for boundaries or rivers
-  **polygons** for states or parks

Each layer has its own symbols and text label.

In this activity, kids can create their own GIS layers and practice the basics of GIS mapping.

GET INSPIRED

Prior to the development of GIS, transparencies were placed on top of a base map of the same location. These **map overlays** contain a discrete topic, such as businesses, rivers or land use, and when stacked on top of the base map, create a new visualization and provide new insights.

Explore:

-  this [example of GIS](#) comparing population density and location of fire stations in Arlington County, Virginia from the Library’s collection
-  **these resources from the US Geological Survey:**
 - ~ examples of [maps using GIS data](#) including the [National Map](#)
 - ~ [layered maps of your hometown](#) past and present

GET READY

Collect your materials:

-  A map to be used as your base map. You can use a map of your town, a tourist map of an area—such as this [map of Washington, D.C.](#)—or other maps available on the Library’s website (for example, browse maps by state [here](#)).
-  Transparency sheets
-  Thin dry-erase markers in several colors

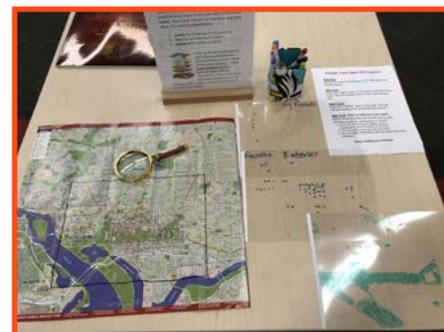
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CREATE YOUR GIS

- 🔍 Select an area the size of your transparency on your map and outline it with a pen. This area will be the focus of the activity.
- 🔍 Look at the map together and think about the types of information that you could add to the map or isolate from it. A few examples include:
 - ~ Waterways
 - ~ Farms and agriculture
 - ~ Public transportation
 - ~ Points of interest/places I've visited/places I want to visit (e.g. museums, monuments)
 - ~ Shops and restaurants



- 🔍 Once you decide on your topics, place a transparency over the map and locate and create the points, lines or polygons for one theme.
- 🔍 Repeat this step for each theme, to create 3-4, or more, transparency layers.
- 🔍 Place the layers in different combinations over the base map.
- 🔍 As you view the layers, overlaid, discuss which items are near to each other or at a distance. Discuss what influences the location of the features. For example, population and businesses are located near transportation. How does the location of each influence the other?



Congratulations! You've made a GIS!

EXPLORE MORE:

- 🔍 Learn about careers at the Library. Read about the work of a Library cartographic specialist in [this blog post](#).
- 🔍 Browse the Library's [digital collection of maps](#) from around the world!
- 🔍 View the library's [GIS Day 2018 event](#), on 'GIS in K-12 Education: From Data to STEM'. See the [full agenda](#).